

# The Imperial Council of Agricultural Research

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## The Fungi of India

BY

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# THE FUNGI OF INDIA.

## I.—INTRODUCTION.

The flora of India has attracted botanists since plants first received scientific attention. The study of the Phanerogams made such progress that they were largely known a half century ago. The fungi, also, were not infrequently collected by early explorers and botanists who visited the country, and gradually increasing interest in them has resulted in the scattered enumeration of many hundreds of species; nevertheless they are still most inadequately known to science. This publication is made to gather together the records of Indian fungi isolated in more than five hundred separate papers, in the hope that it will facilitate the work of those who are carrying on the study of mycology in India.

The general physiographic features of India are well known. The Himalayas exist as an apparent barrier between India and the rest of Asia; but they are not a real barrier, for even the rivers cross them, and not only Chinese but also European plants have penetrated the range to its southern slopes and sometimes into the plains beyond. Sir Joseph Hooker,\* in his excellent "Sketch of the Flora of British India", emphasizes the great variation in climate, rainfall, humidity, altitude, soil, and other factors, and the opportunities for immigration of plants into India, so that it is not surprising that "the Flora of British India is more varied than that of any other country of equal area in the eastern hemisphere, if not in the globe". Hooker divides India into three primary botanical areas: the Himalayan, with many European and Siberian genera; Eastern India, with Chinese and Malayan genera; and Western India, with European, Middle Eastern, and African genera. These areas are further subdivided, but though it is obvious that the character of the fungus flora must be markedly influenced by the nature of the supporting Phanerogams of any region, it is premature to attempt to apply these floristic subdivisions to the fungi. Some considerations of the nature and distribution of the Indian fungus flora are presented in the pages which follow.

## II.—HISTORICAL.

Linnaeus † appears to have been the first to publish a definite record of an Indian fungus when he described his *Lycoperdon pistillare*, 160 years ago. This species was transferred by Persoon (Syn. Meth. Fung., 1801, p. 150) to *Scleroderma* and by Fries to *Podaxon*. It was collected by Koenig, who was a Danish missionary in Tranquebar, Tanjore, from 1767 to 1785, and some of whose collections of Indian fungi

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\* Imperial Gazetteer, 3rd edition, 1906.

† Mantissa plantarum, altera Generum editionis VI et Specierum editionis II, p. 313, 1771.

were later mentioned by Fries (237, 239). Fries subsequently (240) examined collections made in the Nicobar Islands by Didrick Ferdinand Didrichsen, who spent two months there when the corvette "Galathea" visited these Islands on her trip around the world in 1845-1847.

Early in the Nineteenth Century Wight collected a number of fungi in India, which were later examined by Klotzsch (273, 274) and by Berkeley (51). Bélanger was in India in 1825-29, and Montagne (350) records a few fungi which he collected. Jacquemont then visited India in 1829-32, and Lévêillé described two or three of his fungi which came to France. Perrottet followed about 1840 and his collections, which were chiefly in the Nilgiri Hills, were worked over by Montagne. A few other specimens of fungi had found their way from India to Europe before 1850 (Corda (185), for example, cites a few specimens from Dr. J. Helfer), but the total number of species of Indian fungi known to science before 1850 would scarcely have exceeded one hundred.

Dr. (afterwards Sir, recorded in later pages as "Hooker f.") Joseph D. Hooker, and sometimes his co-worker Dr. Thomson, found time, during their survey of the Indian Flora, to collect hundreds of specimens of fungi. These collections were made principally in 1849 and 1850, although some bore an earlier date, and were more especially from Sikkim or elsewhere in the Himalaya and from the Khasi Hills. They were often accompanied, in the case of fleshy fungi, by sketches made from fresh specimens by Dr. Hooker. The specimens and drawings were sent to Berkeley, who began their publication in 1850 (Decade 25; 57, No. 241). Berkeley felt constrained to begin his account by remarking that "every species has been most severely scrutinised, and it is only after long study that I have felt myself compelled to propose so many new species. In the Agaricini, though several species have close allies in Europe, a vast portion of the forms are altogether new and peculiar, and often on a scale of the greatest magnificence. . . . The Agarices seem to form far the greater portion of the Fungi of the country".

It is easy to understand that Berkeley must have had a very difficult task in attempting to match the drawings and dried specimens communicated by Hooker with previously described species, and when, as usual, that proved impossible, in drawing up a new description. Berkeley would have been surprised, doubtless, could he have foreseen that eighty years after his labours, most of the Agaricaceae of India would be known only from the specimens he examined. Lack of opportunity to follow up the work he started, together with the inherent difficulty of the task, are largely responsible for the fact that we would still have had practically no idea of the gill fungi which occur in India were it not for his efforts. Whether the new species he described can be recognised again, remains to be seen; many of them doubtless can be, with the aid of the specimens and drawings filed at Kew.

The first extensive collection of Burmese fungi was made by Sulpiz Kurz, Curator of the Royal Botanic Garden, Calcutta, whose specimens (which also included many from Bengal) were reported on by Currey in 1874 (196). About this



time, and for many years after, Cooke was receiving at Kew and describing considerable numbers of Indian fungi, and specimens were sent also to Rabenhorst, Brefeld, Dietel, Patouillard, and various other mycologists abroad. At the close of the century collections were made by Gollan in the United Provinces and studied by P. Hennings (260, 263), and Massée began the series "Fungi Exotici" in the Kew Bulletin, which he and Miss Wakefield carried on for a number of years and which included descriptions of various Indian species. Theissen (467) reported on a collection of Bombay fungi received from his colleague Father E. Blatter, while Bresadola and Saccardo examined certain Indian fungi to which they had access.

During the past quarter of a century H. and P. Sydow, particularly the son, H. Sydow, have examined critically hundreds of species of Indian fungi communicated to them mainly from Pusa and Coimbatore. The late C. G. Lloyd had about a score of correspondents in different parts of India, and his racy notes on the larger fungi contain many references to Indian species. Specimens of fungi from India have, indeed, found their way to most of the larger herbaria, as is indicated by the list of publications cited in the Bibliography.

The historical summary just presented deals with the studies based on specimens of Indian fungi sent to the herbaria in England, the Continent, or America. In the meantime, work was begun in India itself, where alone the often necessary observations on these plants in the fresh condition and studies of their life-histories could be made. Two Indian army medical officers were the pioneers in this field. D. D. Cunningham published between 1871 and 1897 the results of his studies, carried out in intervals of medical and sanitary work, on certain fungi, especially *Mucoraceae* and *Uredinales*, observed in Calcutta and elsewhere in eastern India. About 1885 A. Barclay began his critical work on the rusts near Simla, and during the following seven years worked out the life-histories of many of the Himalayan *Uredinales*. Mr. (later Sir) George Watt made collections of and observations on a few of the economically important fungi found on tea and some other crops after Barclay's death. The senior author arrived in Calcutta in 1901, was transferred to Dehra Dun in 1902 and to Pusa in 1905, and was officially concerned until 1920 with the mycology of India, especially the parasitic fungi, assisted by W. McRae, F. J. F. Shaw, J. F. Dastur, and others. Later on the Provinces of India extended their agricultural departments to include the investigation of plant diseases, Government mycologists or plant pathologists being attached to the headquarters of several of the provincial departments, while A. C. Tunstall and Leslie Coleman were doing valuable work at other stations. Meanwhile the Indians themselves took up the problems, particularly those of applied mycology (although S. R. Bose has devoted much attention to the *Polyporaceae*), and are now carrying on most useful work in many places in India and Burma.

Mr. T. Petch, Botanist and Mycologist to the Department of Agriculture, Ceylon, accomplished a tremendous amount of valuable mycological work while in that neighbouring Colony, and has made possible the determination of many Indian fungi,

such as the entomogenous species and those cultivated by termites. Many of the fungi occurring in Ceylon, and still unknown in India, will probably be found when more thorough collections are made in the south of the Peninsula.

This brief sketch covers but imperfectly the development of the knowledge of Indian fungi. The Bibliography, however, tells the story more fully.

### III.—THE DISTRIBUTION OF THE FUNGI.

From an examination of the List of Species it may be seen that the following numbers and percentages of the fungi recorded for India were first described from India :—

	Per cent.
Phycomycetes 18 species . . . . .	24
Ascomycetes 233 " . . . . .	49
Ustilaginales 51 " . . . . .	51
Uredinales 219 " . . . . .	57

We have not checked the remainder of the Basidiomycetes, not the Fungi Imperfecti, but similar figures would be obtained in these groups. Of the four groups mentioned, 521 species out of a total of 1,035, or approximately 50 per cent., were first described from India. This does not mean, however, that India has a high percentage of endemic fungi: many of these species, though first described from India, are now known from other countries. As a matter of fact, since India, as Hooker mentions, has a low percentage of endemic Phanerogams, so it has also doubtless a low percentage of endemic fungi. The figures presented only indicate that, poorly though the fungi of India may be known, they are nevertheless better known there than in most other similar tropical or subtropical areas.

The distribution of fungi over the world is still so imperfectly known as to render uncertain an attempt to make a general analysis of the distribution elsewhere of the fungi recorded for India. In any attempt of this sort, one is hampered not only by a lack of knowledge of distribution of the vast majority of fungi, but also by a feeling that misdeterminations entered in the records vitiate any conclusions. These errors of determination are, however, of two kinds which tend to neutralize each other: either that of a previously known fungus having been given a new name, or that of a new fungus having been referred erroneously to an old species. In view of the importance and interest of assembling such data as are available, we have made the following comparisons, with full realization of the uncertainties involved.

*Comparison of the fungi of India, of the Dutch East Indies, and of Manitoba.* Among the few areas outside of Europe which have brought together lists of fungi comparable in extent with the present list of Indian fungi, we have chosen the Dutch East Indies and Manitoba. The former is a tropical area geographically not far distant from India, but with a phanerogamic flora quite different, especially from that of the parts of India in which mycological collections have chiefly been made. Van Overeem\* has brought together a list of the fungi recorded there up to about

\* Van Overeem-de Haas, C. et D. Verzeichnis der in Niederländisch Ost-Indien bis dem Jahre 1920 gefundenen Myxomycetes, Fungi und Lichenes.—Bull. Jard. Bot. Buitenzorg, Sér. 3, IV, fasc. 1, 146 pp., 1922.

ten years ago. Manitoba is a north temperate area in Canada, far removed geographically and with a flora of vascular plants differing almost completely from that of India, except that a very few similar or identical plants are found in Himalayan regions and in Manitoba, and a few cultivated plants and weeds are common. A recent book\* treats of the fungi of this area.

TABLE I.

*Comparison of the fungi of India, the Dutch East Indies, and Manitoba.*

Group	Number in Dutch East Indies	Percentage also in India	Number common to India and Dutch East Indies	Number in India	Percentage also in Dutch East Indies	Percentage also in Manitoba	Number common to India and Manitoba	Number in Manitoba	Percentage also in India	Number common to all three areas
Archimycetes . . . . .	2	..	..	12	..	8.3	1	4	25.0	..
Chytridiales . . . . .	3	..	..	4	..	..	..	..	..	..
Oomycetes . . . . .	17	53.8	10	45	23.2	33.3	15	20	57.7	5
Zygomycetes . . . . .	10	20.0	2	14	14.3	21.4	3	18	16.7	1
Total Phycomycetes . . . . .	32	37.5	12	75	16.0	25.3	19	48	39.6	6
Hemiascomycetes . . . . .	17	..	..	13	..	15.4	2	6	33.3	..
Discomycetes . . . . .	181	6.1	11	60	15.9	23.2	16	146	11.0	4
Pyrenomycetes . . . . .	650	3.9	58	394	14.7	7.1	28	265	10.6	5
Total Ascomycetes . . . . .	848	8.1	69	470	14.5	9.7	46	417	11.0	9
Ustilaginales . . . . .	23	34.8	8	100	3.0	11.0	11	36	30.6	2
Uredinales . . . . .	106	14.2	..	384	3.0	7.3	28	134	20.9	1
Polyporaceae† . . . . .	352	21.9	77	313	24.2	8.5	27	112	24.1	14
Other Hymenomycetes . . . . .	473	10.7	51	462	11.0	15.4	71	650	10.9	22
Gasteromycetes . . . . .	72	22.2	16	75	21.3	13.3	10	37	27.0	5
Total Basidiomycetes . . . . .	1,031	16.2	167	1,339	12.5	11.0	147	969	15.2	44
Hyphomycetes and Mycelia Sterilia . . . . .	236	5.9	14	196	7.1	11.2	22	191	11.5	3
Melanconiales and Sphaeropsidales . . . . .	127	6.3	8	205	3.0	5.7	15	202	5.7	..
Total Imperfecti . . . . .	363	6.1	22	461	4.3	8.0	37	453	8.2	3
Total Fungi . . . . .	2,274	11.9	270	2,351	11.5	10.6	249	1,887	13.2	62

† Including Boletaceae.

\* Bisby, G. R., Buller, A. H. R., and Dearnsey, J. The Fungi of Manitoba, 104 pp., Longmans, Green & Co., 1929.

Table I presents the comparison. The number of supposedly identical fungi in the three areas is obtained with some difficulty, owing to variations in mycological nomenclature, but the tabulation is approximately correct. The arrangement of the figures follows the groupings used in the present list.

From Table I it may be seen that 11.5 per cent. of the fungi recorded from India have also been recorded in Java, and 10.6 per cent. are listed also in Manitoba. It may be noted further that 62, or 2.7 per cent., of the fungi of India have a distribution which includes all the three areas under consideration.\*

The Gasteromycetes, Polyporaceae, Discomycetes, and Phycomycetes show the widest distribution; the Fungi Imperfecti and the Uredinales a more restricted one. This is not surprising, in view of the fact that the rusts are necessarily limited by their hosts, and the Fungi Imperfecti that have been identified in the three areas are principally the parasitic forms, likewise dependent upon specific hosts. A comparison of the fungi recorded from India with those existing in Europe will make the conclusions more definite.

*The Fungi of India which occur in Europe.* Table II gives the figures and percentages:—

TABLE II.

*Fungi common to India and Europe.*

Group	Number in India	Number also in Europe	Percentage in Europe
Archimycetes . . . . .	12	6	41.7
Chytridiales . . . . .	4	1	25.0
Oomycetes . . . . .	45	27	60.0
Zygomycetes . . . . .	14	5	35.7

\* The following are the 62 fungi recorded for the three widely different areas: *Pythium de Baryanum*, *Cylopus bliti*, *Phytophthora infestans*, *Sclerospora graminicola*, *Plasmopara viticola*, *Rhizopus nigricans*, *Leotia hirsuta*, *Peziza aurantia*, *Helotium citrinum*, *Rhizisma acerinum*, *Nectria cinnabarina*, *Phyllachora graminis*, *Daldinia concentrica*, *D. verrucosa*, *Xylaria hypoxylon*, *Ustilago nuda*, *U. tritici*, *Puccinia pimpinellae*, *Hirneola auricula-judae*, *Eridia glandulosa*, *Tremellodon gelatinosus*, *Guepinia spatularia*, *Hymenochaete rubiginosa*, *Stercum hirsutum*, *S. purpureum*, *Clavaria stricta*, *Hydnum coralloides*, *Merulius corium*, *Pomas fomentarius*, *F. igniarius*, *Ganoderma applanatum*, *Polyporus adustus*, *P. arcularius*, *P. cinnabarinus*, *P. gilvus*, *P. sulphureus*, *P. varius*, *Polystictus hirsutus*, *P. pergamenus*, *P. versicolor*, *P. zonatus*, *Russula alutacea*, *R. emetica*, *Schizophyllum commune*, *Panaeolus campanulatus*, *P. papilionaceus*, *Hypholoma appendiculatum*, *H. fuscicrura*, *Agaricus campester*, *Myceus galericulatus*, *M. pura*, *Chilocybe luteola*, *Armillaria mellea*, *Amanitopsis virgata*, *Lycoperdon gemmatum*, *L. giganteum*, *L. pyriforme*, *Gaster fimbriatus*, *Orucibulum vulgare*, *Aspergillus niger*, *Botrytis cinerea*, *Helminthosporium graminum*. Most of these species appear to be indigenous to the three areas: only *Phytophthora infestans*, *Plasmopara viticola*, and the two smuts can be considered definitely to have been introduced into the areas concerned. Mycologists will probably agree that most of the remaining 58 species are widely distributed fungi, and that there is doubtless a considerable number of other fungi with a distribution including India, the Dutch East Indies, and Manitoba. But very few or no vascular plants have a range which would make them indigenous to these three regions.

TABLE II—*contd.**Fungi common to India and Europe—contd.*

Group	Number in India	Number also in Europe	Percentage in Europe
Hemiascomycetes . . . . .	13	4	30.8
Discomycetes . . . . .	69	29	42.0
Pyrenomycetes . . . . .	394	49	12.4
Ustilaginales . . . . .	100	25	25.0
Uredinales . . . . .	384	74	19.3
Polyporaceae . . . . .	318	53	16.7
Other Hymenoniyetes . . . . .	402	143	31.0
Gasteromycetes . . . . .	75	23	30.7
Hyphomycetes and Mycelia Sterilia . . . . .	196	49	25.0
Melanconiales and Sphaeropsidales . . . . .	265	58	21.9
Total . . . . .	2,351	545	23.2

It is now quite evident that the fungus flora of India can be considered, despite our very incomplete knowledge of it and the erroneous and questionable identifications involved in many instances, to consist of a fairly large percentage of species occurring more or less widely in the North Temperate Zone, and a larger percentage of fungi limited to tropical regions or to tropical host plants. Nearly one quarter of the known Indian fungi are recorded also in Europe. This figure is not especially high when compared with the percentage common to Europe and Manitoba (about 60 per cent.), in spite of the fact that Manitoba is more distant from Europe than India is. But the general character of the phanerogamic flora of Manitoba is much more similar than is that of India to the flora of Europe; and more than 20 per cent. of the indigenous species of Phanerogams of Manitoba, but only 6 per cent. of those of India, occur also in Europe.

*The distribution of the Phanerogams compared with that of the Fungi.* Hooker \* observed that of some 17,000 species of Phanerogams in India (with which he included Malaya and Ceylon), 760 European species are indigenous in the Indian region, and of these some 400 are also in the British Isles. Of these 17,000 species, there are perhaps 4,000 Ceylon and Malayan plants which do not occur in India, and are of course also non-European. In other words, about 6 per cent. (760

\* A Sketch of the Flora of British India. Imperial Gazetteer, 3rd Edition, 1906.

out of 13,000) of the Indian Phanerogams occur also in Europe. These percentage figures would not be much increased were one to add also the few score cultivated plants and weeds common to Europe and India. It seems safe to conclude that the fungi have an average distribution much wider than that of the vascular plants.

*Comparison of the rusts of India and of other countries.* Of the fungi recorded here for India, the Uredinales are best known not only in India but in the world as a whole. The total number of species hitherto found in India is 384, including unconnected forms, as compared with 252 species in the British Isles, 237 in California, 372 in Switzerland, 482 in Italy, about 1,200 known in the whole of North America, but only 162 in Australia.\*

The 384 rusts in India include 102 unconnected forms in *Aecidium* and *Uredo*. The life cycles of many of the species in other genera are also not fully known, and, of course, many species still remain entirely undetected in India. In the case of the rusts, however, it is felt that in most cases the same name applied to a species in India and in England or in America really refers to the same fungus, and a different name to a different one. The following data are compiled, using distribution records in Sydow's Monographia, Grove's "British Rust Fungi" for occurrences in the British Isles, and Petch (369) for Ceylon.

The 102 unconnected forms are in the majority of cases known at present only in India. In some instances they will prove to be only stages of known rusts; but at present they largely represent unknown quantities as regards distribution.

The remaining 282 rusts may be tabulated as follows:—

16 species, or 5·7 per cent., are listed otherwise only from Europe.

60 species, or 21·3 per cent., are listed otherwise from Europe and other countries.

9 species, or 3·2 per cent., are listed otherwise only from North America.

4 species, or 1·4 per cent., are listed otherwise from North and South America.

13 species, or 4·6 per cent., are listed otherwise only from Japan.

59 species, or 20·9 per cent., are listed also from the British Isles.

49 species, or 17·4 per cent., are listed also from Ceylon.

From the above it may be seen further that 76 species, or about 27 per cent., of these Indian Rusts have a distribution which includes Europe, and 13 species, or 4·6 per cent., are, so far as is now known, Indian-American in range. The 4·6 per cent. known only from India and Japan may well occur also in China or elsewhere in eastern Asia, which is as yet for the most part mycologically unexplored.

If it be considered that each of the 102 unconnected forms in India represents a definite species with a distribution limited to India, then 59 of the total of 384 rusts, or 15·3 per cent., would have a distribution including the British Isles and India, and nearly 20 per cent. would have a distribution including Europe as well as India, whereas only about 6 per cent. of indigenous Phanerogams are common.

The above figures for Uredinales and Phanerogams are not strictly comparable, because those for the former must include introduced species, since it is often

\* Data from Arthur et al., Plant Rusts, 1929, and McAlpine, Rusts of Australia, 1906.

difficult or impossible to determine whether or not a fungus has been introduced. There are a considerable number of introduced flowering plants in India,\* especially cultivated plants and weeds, and with some of these rusts have certainly immigrated. These introduced rusts are the most likely to be collected. If allowances be made for this element in the Indian flora both of hosts and rusts, the figures for distribution of the flowering plants and for the rusts become more similar, as indeed we should anticipate from the restricted and obligate parasitism of the latter.

Nevertheless, further study may indicate rather definitely that species of rusts have, on the average, wider ranges of distribution than species of Phanerogams. If we take again the rusts of the British Isles and of India, we may note that of the 252 species in the British Isles, 59, or 23.4 per cent. have been recorded also in India. And even more striking is the comparison between the rusts occurring in India and in Manitoba. Only a few cultivated plants and weeds, and a few species of indigenous Phanerogams, are common to these two areas which are so nearly antipodean, and yet 28 species of rusts are common to both: over 7 per cent. of the known Indian rusts occur in Manitoba, and some 21 per cent. of the 134 rusts known in Manitoba, occur also in India. Nine † of these 28 rusts were probably introduced into one or both areas, but the other 19 species ‡ appear to be native to both. It should be remarked that of these 19 species, three, (*Puccinia andropogonis*, *Uromyces prominens*, and *U. scirpi*) are recorded with considerable doubt from India. All of these species apparently native to both India and Manitoba, with the exception of *Uromyces fabae*, have been found only in the colder, Himalayan region of India. *Puccinia circaceae*, *P. polygoni-amphibii*, and *Uromyces polygoni* utilize the same species of hosts in both countries, as does *U. fabae* in part; the remainder apparently utilize different but related hosts in the two countries.

Species of certain non-parasitic groups of fungi certainly have a very wide distribution: thus, of the 69 names that have been applied to Discomycetes from India, over 40 per cent. are found in European lists, and 23 per cent. in the Manitoba list; of the 75 recorded Gasteromycetes, 20, or 27 per cent. are known in England. It is to be expected that fungi which develop upon leaf mould or decaying wood may find a suitable substratum in almost any country, but we cannot pursue our comparisons far, because the data are too indefinite. Petch § has presented a discussion of the uncertainty involved in applying the names of European fungi to specimens from the tropics, in which he concludes that, in general, the

\* Professor L. A. Kenoyer, Plant Life of British India, Sci. Monthly, XVIII, p. 58, 1924, states that "The present Indian flora contains many introduced plants, American ones being especially prominent."

† *Melampsora lini*, *Puccinia coronata*, *P. graminis*, *P. lolii*, *P. sorghi*, *P. anomala*, *P. tarazaci*, *P. tritici*, and *Uromyces trifolii*. The names used in the Manitoba list are in a few instances different from those used here.

‡ *Phragmidium discolorum*, *P. potentillae*, *Puccinia absinthii*, *P. andropogonis*, *P. caricis*, *P. caricis-asteris*, *P. circaceae*, *P. hseracii*, *P. menthae*, *P. phragmitis*, *P. pimpinellae*, *P. polygoni-amphibii*, *P. punctata*, *P. violae*, *Pucciniastrum agrimoniae*, *Uromyces fabae*, *U. polygoni*, *U. prominens*, and *U. scirpi*.

§ Petch, T. European fungi in the tropics.—Trans. Brit. Myc. Soc., III, pp. 340-347, 1912.

worse the material, the higher the percentage of European names applied to it. He was referring more particularly to the Agaricaceae of Ceylon, but there can be no doubt that the same rule would apply to the names given by earlier mycologists to many specimens of fungi from India. Bose (79) has, however, given some interesting data regarding the distribution of the Polypores in India and elsewhere.

*Distribution of the fungi within India.* The distribution of rusts in certain of the northern areas of India is indicated in Table III.

TABLE III.

*Comparison of the Uredinales of three Northern Areas of India.*

	KASHMIR VALLEY		SIMLA		KUMAON	
	Number	Percentage	Number	Percentage	Number	Percentage
Genera exclusive of <i>Aecidium</i> and <i>Uredo</i> —						
Species recorded . . . . .	49	..	88	..	52	..
Endemic* . . . . .	2	4.1	15	17.0	6	11.5
Known only from India . . . . .	15	30.6	52	59.1	33	63.5
Known also in Europe . . . . .	28	57.1	26	29.5	13	25.0
Known also in North America . . . . .	20	40.8	18	20.5	9	17.3
Form genera <i>Aecidium</i> and <i>Uredo</i> —						
Species recorded . . . . .	3	..	15	..	11	..
Endemic* . . . . .	..	..	8	40.0	5	45.5
Known only from India . . . . .	2	66.7	5	33.3	4	36.4

It will be seen that Kashmir differs from Simla and Kumaon in having a low percentage of rusts which are apparently endemic or Indian, but a higher percentage with a distribution including Europe or North America. This may be due to the fact that there is a similar distribution of the genera of the supporting higher plants, but it serves to confirm the statement made on an earlier page that the high mountain ranges to the north and north-west of India (especially the latter) are not a real barrier to the dissemination of plants.

The Erysiphaceae or white powdery mildews are generally stated to be rare in the hotter parts of the earth as compared with their numbers in temperate zones, and they have been contrasted in this respect with the sooty moulds, whose distribution is mainly tropical. So far as India is concerned, Erysiphaceae have been found throughout the country, but in the hotter parts they occur chiefly in the *Oidium* stage alone. Perithecial stages of Erysiphaceae have been found in India on some 59 different host plants, 15 species of mildews being represented but *Erysiphe polygoni* being on 25 of the 59 hosts. The 77 collections (excluding duplicate

\* Endemic, so far as known, to Kashmir, Simla, or Kumaon, respectively.



collections from the same locality) in which perithecia have been found are distributed as follows:—

- 43 in the Himalaya, especially Kashmir.
- 3 in the foot-hills of the Himalaya.
- 1 in the Khasi Hills.
- 14 in the Indo-Gangetic Plain.
- 4 in Central India.
- 5 in Western India.
- 3 in South India.
- 4 in Burma.

It is evident, therefore, that a high proportion of the perithecial collections has been made in the north, either in the hills or in regions, such as the Indo-Gangetic Plain, in which there is a distinct cold season. Conidial stages are very prevalent in the Indo-Gangetic Plain: in Pusa, for instance, besides the 3 species bearing perithecia on 8 hosts, there are probably over 100 hosts on which *Oidium* alone occurs.

The sooty moulds or fumaginae include a number of black, superficial leaf-inhabiting fungi, saprophytic in the sugary excretion of certain insects or haustorial parasites of the epidermis. They include, in the sense used by Arnaud,\* representatives of several groups of the Ascomycetes and do not form a homogeneous whole. We have selected as typical genera, *Meliola* with 30 recorded Indian species, *Asterina* with 15, *Capnodium* with 7, *Asterinella* and *Dimerosporium* with 3 each, *Phaeosaccardinula* with 2, and *Parasterina*, *Phragmocapnia*, *Prillicurina*, and *Pyrenocarpon* each with 1, or in all 64 species. The distribution of these, so far known, is as follows:—

	Species.
Eastern Bengal, Assam, and Lower Burma . . . . .	22
Western Peninsula from Bassein to Travancore, including western Mysore and the Nilgiris . . . . .	33
Eastern Peninsula from Orissa to the Godavari . . . . .	6
Gangetic Plain to Calcutta . . . . .	8
Madras, other than regions included above . . . . .	4
Himalaya . . . . .	3
"India" . . . . .	1

Humidity as well as temperature is probably a factor in this distribution. The western side of peninsular India and the regions to the north and east of the Bay of Bengal represent the areas of highest rainfall †, and by far the largest number of species of the genera mentioned above occur in these areas. In the Himalaya and the whole of north-western India they seem to be rare. They appear also to be relatively scarce in the areas of extreme temperatures, both where the hot season is very hot and where the winters are relatively cold. Eight of the species are

\* Arnaud, G. Les Astérinées. Thèse, Fac. des. Sci., Paris, 1918.

† Imperial Gazetteer of India, Atlas, Pl. 9, 1909.

common to the first two areas in the table, while four from the first and three from the second are also found in the Gangetic Plain.

*Estimate of the number of fungi in India.* The present list of 2,350 species of fungi recorded from India obviously includes but a small fraction of the total that occurs there. There are present some 15,000 known species of Phanerogams, or about one-tenth of those known in the world, and some 600 Pteridophytes. Hooker notes that "fungi abound in most parts of India". More *genera* of Phanerogams are at present known in India, than *species* of fungi. It would be conservative to estimate that there are in India at least as many species of fungi as of vascular plants: indeed, in north temperate regions such as England and elsewhere in Europe, in Manitoba and, apparently, elsewhere in North America, the fungi have been found (owing especially to their wider average distribution) to outnumber the Phanerogams by at least 2 to 1.\* If similar ratios exist in the tropics, it may well be that no more than 10 per cent. of the fungi of India are recorded, and many of those recorded are doubtful; yet India is mycologically as well known as any other comparable area extending into the tropics.

#### IV.—CHARACTERS OF THE FUNGUS-FLORA.

The Myxomycetes have not been studied in India, but many of these widely distributed organisms occur there. A few species of bacteria parasitic upon cultivated plants have been observed, but are not listed here. The Phycomycetes have, however, received considerable attention. Several of that simple or primitive group, the Archimycetes, have been encountered, but only four of the Chytridiales have been identified. The Saprolegniales are undoubtedly present in considerable diversity, but only four species in four genera are named. The genera *Pythium* and *Phytophthora* have had comparatively extensive study in India, as the entries under these genera indicate.† Six of the very widely distributed species of *Cystopus* occur commonly in India. A number of the common downy mildews (Peronosporaceae) have been found in India, where they occur especially during the cool season, or in more northerly stations. Little study has been given to the Mucorales, but they apparently occur as moulds in the soil and on organic material, much as they do in more northern latitudes. Very few Entomophthoraceae are known as yet.

The Ascomycetes constitute a large assemblage in India, as elsewhere. Few Hemiascomycetes have been studied, but there are doubtless many Saccharomycetes and other lower Ascomycetes present. A few species of *Taphrina* (this name, rather than *Erysia*, has been used) occur. The Discomycetes (including Helvellales,

\* In Rabenhorst's Kryptogamenflora, covering north central Europe, nearly 15,000 fungi are listed. A figure for the vascular plants of an exactly similar area was not obtained, but Coste gives 4,263 species of Phanerogams and 91 of Pteridophytes for France and Corsica (Flore de la France, 1906).

† See also Ashby, S. F., Kew Bull., 1922, pp. 257-262, and Trans. Brit. Myc. Soc., XIII, pp. 86-95, 1928.

Pezizales, Phacidiales, and Tuberales) have never been found in great diversity in India; but they have never been diligently sought.

The Pyrenomycetes (here used to include all the Ascomycetes from Hysteriales on through the Laboulbeniales) are represented by some 400 entries. Only two or three each of the Hysteriales and Plectascales have been found in India. The Perisporiales are represented by a number of the widely distributed powdery mildews (Erysiphaceae) and by many of the Perisporiaceae. The genus *Meliola* has been divided by Theissen and Sydow\* into three, and by von Hoehnel † into five genera, but since the Indian species could not be separated into these divisions without critical revision, they have been left in *Meliola*. The saprophytic sooty moulds, such as *Capnodium* and related fungi, are also rather common in India, frequently in their conidial and pyrenidial forms alone. The Hemisphaeriales appear to be abundant throughout tropical regions, *Asterina* being the genus most commonly encountered in this order. In the Hypocreales there have been found several species of *Nectria*, and a few of *Hypocrea* and other genera. The genus *Cordyceps* has been reported only twice (both specimens collected by Hooker and Thomson in the Khasi Hills), and the genus *Claviceps* is represented only by *Sphaelia* stages, which are usually precluded from continued development by attacks of *Cerebella*. In the Dothidiales the genus *Phyllachora* predominates as one of the largest amongst the Ascomycetes.

The Sphaeriales occur in abundance in India, as they do everywhere. The Finetariaceae have not been studied, and are represented only by three names in *Chaetomium*, two of which were applied to Indian material by Corda. The Sphaeriaceae have a few representatives known, but the Cucurbitariaceae and Coryneliaceae only one and two, respectively. The Xylariaceae is the only other family which requires mention: for the long list of species of *Xylaria*, and the considerable number of those of *Hypoxydon*, make this family dominant among the Sphaeriales.

The Laboulbeniales are doubtless present in India in large numbers, but the records in seven genera are made up principally from references in Thaxter's publications.

The Ustilaginales include a hundred species, many of which are widespread, and several of economic importance. Ciferri (121: 28) agrees with Maire in restricting the genus *Cintractia* to those smuts on Juncaceae and Cyperaceae: we have indicated the two changes involved in this list, if Ciferri were to be followed. In India, as in other tropical countries, are to be found fungi classified under *Graphiola*, *Farysia*, and *Stylina*: while there is still some discussion as to the systematic position of these genera, they seem to fit best into the Ustilaginales. Certain other less common genera occur in India, but the genus *Ustilago* is the predominant one.

\* See Ann. Myc., XV, pp. 461-463, 1917.

† Fragmenta (264), XXIII, p. 22, 1919.

The Uredinales have already been discussed in part. As is usual in lists of tropical fungi, a considerable percentage of the species can be included only as form genera. India has its quota of those genera which develop rarely or not at all in temperate regions, such as *Blastospora*, *Chnoospora*, *Crossospora*, *Hamasporea*, *Hemileia*, *Masseeella*, *Monosporidium*, *Pucciniostele*, *Ravenelia*, *Schroeteria*, and *Sphaerophragmium*; and *Cystospora* and *Gambleola* are known only from India. Nevertheless *Puccinia* with 140 species, and *Uromyces* with 47, are the common genera in their usual proportion to the total number, and to each other. About half the Indian rusts are known only from the northern part of the country, which has been most carefully surveyed. Some 53 (18·7 per cent.) of the 283 rusts for which a teleuto stage is known, are known only in this stage; but several of these certainly have other spore forms in their cycle. The genus *Melampsora* requires further study in India, but on the whole the rusts are comparatively well known.

Of the Hymenomycetes we can say but little. A few of the Auriculariales and Tremellales have been named, and several Thelephoraceae. The Polyporaceae have been collected by many in India, and despite our efforts to bring synonyms together, there still remains a total of 301, as follows: *Cyclomyces*, 1; *Dacdalca*, 16; *Elmerina*, 1; *Favolus*, 9; *Fistulina*, 1; *Fomes*, 38; *Ganoderma*, 6; *Gloeoporus*, 2; *Hexagonia*, 12; *Lenzites*, 17; *Merulius*, 4; *Polyporus*, 79; *Polystictus*, 81; *Poria*, 9; and *Trametes*, 25. The Polypores are unquestionably abundant in variety in India; but one has a feeling that in this family there cannot be very many more than the 300 species which now purport to exist there.

The Boletaceae are represented by 12 entries in *Boletus*, each name applied by Berkeley as a new species based upon specimens and sketches from Hooker, and 5 species of *Strobilomyces*. None of the 12 Boleti has been reported from India since Hooker collected them about 1850, though fungi of this group are extremely prominent in the outer ranges of the Himalaya. Difficulties in preservation for subsequent study, no doubt, account for this hiatus in our knowledge.

For the Agaricaceae we have brought together the references, principally from Berkeley and P. Hennings. Thanks to Berkeley's efforts in particular, we can have some idea as to the mushroom flora of northern India, even though it may involve considerable labour to fit his names accurately to subsequent discoveries. As we have mentioned (p. ii), Berkeley found that the majority of the species required new names. He remarks (57, No. 291) that "Fries suspected that the *Coprini* would be found on a splendid scale in tropical countries. Later illustrations, whether of the pencil or herbarium, do not prove this, the species of *Coprinus* being, generally, either the same with our own, or obscure and uninteresting. The mushroom, on the contrary, assumes every conceivable luxuriance of form." We have now 6 entries under *Coprinus*, and 12 under *Agaricus*. *Amanita* is represented by one collection only, referred by Berkeley to the edible *A. caesarea*. *Armillaria mellea* occurs to some extent in the Himalaya as a root parasite: Miss Wakefield (see 266: 437) found it practically identical with English examples. *Collybia* seems to be

well represented in India. *Cortinarius*, so abundant in northern Europe, is known from India by only five collections, all made by Hooker. Only two species of *Crepidotus* are recorded, both collected by Gollan and determined by Hennings, and there are also two species of *Inocybe*. *Lactarius* and *Russula* have comparatively few entries in the Indian records, but *Lentinus*, *Lepiota*, and *Marasmius* are better represented. On the whole, the Agaricaceae of India are as yet scarcely known, and we cannot profitably discuss their features from the few and uncertain data available.

The short list of Gasteromycetes exhibits a number of the ubiquitous forms, and several, such as certain of the Phallales, which are known only in tropical regions.

The Fungi Imperfecti are, of course, present in India in enormous numbers, and include many important parasitic groups. Not much work has, as yet, been done upon them, and we present only comparatively few records gleaned from previous publications. Some special study has been given to *Cercospora* (457) with the result that 59 species are now known in India. This genus is commonly present as a parasite on cultivated and wild hosts in India and elsewhere in the tropics: about three-fourths of the Indian species are known in other countries also, and some of them are very widely distributed over the globe. *Diplodia*, *Phoma*, *Phyllosticta*, and *Septoria* are other common genera in India, as elsewhere.

## V.—EXPLANATORY.

In the List of Species which follows, considerable grouping of orders has been made to facilitate reference; but a purely alphabetical arrangement of all genera and species has not been followed, because of the convenience involved in having separate lists of rusts, smuts, etc.

The nomenclature is, in most cases, that given in Saccardo's *Sylloge Fungorum*. A few of the species of fungi described from India long since, failed to obtain entry into Saccardo: these are usually indicated by "not in Sacc.". It is possible that in one or two of these cases we may have overlooked the Saccardo reference, for we have checked principally from the Indexes in that work, and in one case at least (*Cercospora solanacea*) the description is given, but the species is not indexed. Some would object, under the rules, to Saccardo's usage in compiling; for example, *Polyporus marginatus* Fr. as *Fomes marginatus* Fr., or *Agaricus* (*Collybia*) *camptopus* Berk. as *Collybia camptopoda* Berk., but it is conservative nomenclature, and we have not considered it necessary, in a case such as the latter, to mention that Berkeley's reference was to *Agaricus*. When no mention is made of Saccardo, the species is presumably one described too recently to have been included in the *Sylloge*. In cases in which a fungus was described by an author in another work than his own (e.g., *Diplodia citrina* Diedicke in Sydow & Butler), we have usually omitted the latter part of the reference, since the citation continues with the reference to the publication in which the name was used.

Synonyms are listed with a number of the species. These are only cases in which different names have been applied to the Indian fungi, and are entered and indexed so that older references to these fungi can be traced. No effort has been made to give complete synonymies. Recent revisions of groups of fungi have been consulted and often followed. Bresadola (84, 85) has reported a considerable synonymy, particularly for Polypores; we have followed him in these, and where Lloyd or others give views regarding synonymous species, we have indicated these without, however, altering the records as they stand.

A few records of Indian fungi have been shown definitely to require deletion; these are given in square brackets, and not counted in the totals. Where the records are given as admittedly uncertain, the species name is preceded by a query (e.g., *Puccinia ?andropogonis* Schw.).

In a number of instances "India" is given in the published records of distribution of species of fungi when, upon investigation, it was found that the East or West Indies, Malay, Ceylon, or some other region should have been listed. These species have been left out of this list entirely, since no especial value would come from the attempted correction of all mistakes in geography, many of which are readily detected. In a very few cases in which Saccardo gives India as part of the distribution of a fungus, we have been unable to trace the original reference to India: these are included as "recorded by Saccardo from India".

Host names are as tabulated in the Index Kewensis, except that in three or four cases where the name could not be found there, it is given in quotation marks, and in some others the names used are there listed as synonyms. Hosts infected by artificial inoculation only are not included in the Host Index. When a fungus is recorded, for example, on *Thea sinensis* and *Thea* sp., the latter is not included in the Host Index.

Reference to Saccardo's Sylloge Fungorum (given thus: "Sacc. VI:120," referring to volume and page respectively) is made in every case in which such reference could be found. When the reference to Saccardo is given first, the fungus was not originally described from India, except in a few cases in which Saccardo transferred the species to the genus here used. In the Uredinales, a reference to Sydow's Monographia Uredinearum is similarly given. The other numbers following an entry (e.g. 240:130) refer to the number before the citation in the bibliography, and to the page. When an entry reads, for example, "Sacc. IV:15 as *Oospora*," a synonym is involved which is not known to have been applied to an Indian record. The bibliography references following after a synonym applied to an Indian fungus, usually indicate that these referred to papers in which the synonym was used.

All specific names, whether of fungi or hosts, are given with lower case letters, for typographical convenience and because of the difficulty of using capitals correctly in every case.

No new species are described here, but five new combinations were necessary to transfer species recorded under *Vermicularia* into the genus *Colletotrichum*. Miss Duke (Trans. Brit. Myc. Soc., XIII, pp. 156-184, 1928) and others have shown that *Vermicularia* is untenable. One new name was required in *Sclerospora*.

Cross references are given, in the List of Species, to supposed synonyms, and to other cases where two entries need to be consulted to obtain the data regarding a species. An attempt has been made to give an approximately complete record of the literature pertaining to the occurrence of each species in India, particularly to the first record of its presence there, and also to monographic and other treatments which have brought the knowledge of a species down to date, or have revised it. The bibliography is not, however, entirely complete for references to Indian fungi, since we have omitted a few references of a plant pathological nature,\* in which the mycological phase is not considered, and also a few older records in which references to fungi are too vague to permit entering the data under any species name. An effort has been made to include all the fungi recorded from India to the year 1930.

We have not undertaken to examine specimens of many of the fungi recorded by the older mycologists from India, but Montagne's and Lévillé's specimens at Paris have been looked up, as well as a very few of the specimens at Kew. Several Indian fungi have been issued as exsiccati, but we have listed very few of these references.

#### ACKNOWLEDGMENTS.

We are glad to acknowledge the help of all who have collected or studied Indian fungi, a number of whom are mentioned in the Historical Section above. Of the Indian mycologists, Munshi Inayat Khan, who will be repeatedly referred to as "Inayat" below, stands out as an indefatigable collector and field student of the fungi during his long association with one of us, terminated only by his death. His memory will be preserved as long as Indian fungi are studied, though he published nothing, having little gift for writing and no languages but his native tongue. Barclay deserves special mention for working out so thoroughly the rusts about Simla. The majority of the species he recorded have been re-collected by the Pusa staff, and have been examined, together with many Phycomycetes, Ascomycetes, and Ustilaginales, and a number of Fungi Imperfecti, by the Sydows. Mr. E. S. Salmon has kindly named specimens of most of the species of the Erysiphaceae recorded for India. The late C. G. Lloyd studied many of the Polyporaceae of India, which would be very poorly known except for his assistance. Though his work, and that of the Abbé Bresadola and others, have shown that many of the records of the early students of Indian fungi, such as Berkeley, Lévillé, and Cooke, require revision,

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\* In general the economic importance of the fungi recorded is not stressed. This aspect has been, in part, dealt with by one of us (111) in another publication.

we consider that these pioneer workers deserve more credit than they are sometimes given. Their labours have provided their successors with a starting point in many important groups, and have given at least a general view of some of the salient features of the mycological flora of India.



# THE FUNGI OF INDIA

## LIST OF SPECIES.

### ARCHIMYCETES.

- Olpidiopsis minor* Fischer (Sacc. **XI**:247 ; 94<sup>1</sup>:134, figs.). In hyphae of *Achlya polyandra*, Dehra Dun (Butler).
- schenkiana* Zopf (Sacc. **XI**:247 ; 94:135, figs.; 453:509). In living cells of *Spirogyra* sp., Pusa (Butler).
- Olpidium indicum* Turner (512:164 ; Sacc. **XVI**:389). In *Oedogonium* sp., India (Wallich).
- Plasmodiophora brassicae* Woronin (Sacc. **VII**:464 ; 113 (20)). Recorded by McKee as occurring on *Brassica oleracea* (cabbage and cauliflower).
- Pseudolpidium aphanomyces* (Cornu) Fisch. (Sacc. **VII**:300 as *Olpidiopsis* ; 94:132, figs.; 453:510). In hyphae of *Aphanomyces laevis*, Pusa (Butler).
- Rhinosporidium seeberi* Wernicke, emend. Ashworth (24:301 ; 358:505). This organism, considered by Ashworth (24) to be allied to the Olpidiaceae, was recorded by him and by Norrie in man in India, usually in nasal infections.
- Spongospora subterranea* (Wallr.) Johns. (113 (9):66 ; 2:14). On tubers of *Solanum tuberosum*, Mahableshwar, Bombay ; Himalayas ; Nilgiris.
- Synchytrium collapsum* Syd. (453:510 ; Sacc. **XXI**:839 ; 455:247). In leaves of *Clerodendron infortunatum*, Comilla, and Wahjain, Assam (Butler); Pusa (Inayat).
- rytzii* Syd. (453:510 ; Sacc. **XXI**:840 ; 445:326 ; 455:247). In leaves and petioles of *Anisomeles ovata*, Dehra Dun (Butler); Pusa (Chibber); in leaves, petioles, and stems of *Peristrophe* sp., Pusa (Butler, a); Kangra District, Punjab (Mitter); on *P. bicalyculata*, Pusa ; on leaves of *Justicia* sp., Nagpur (Pandit, b); Samalkota, Madras (Shaw); on *J. procumbens*, Pusa (Butler); on leaves of *Leucas* sp., Benares (Subramaniam, c); on *L. aspera*, Coimbatore (Sundararaman ; McKee); on *Dichliptera* sp., Dehra Dun (Butler); on *Lepidagathis* sp., Dehra Dun (Kar) ; on *Lagenaria vulgaris*, Pusa (Subramaniam). Sydow distinguished between the type on *Anisomeles* and forms a, b, and c on *Peristrophe*, *Justicia*, and *Leucas*, respectively, and was uncertain whether the differences observed were variations of one species or indicated distinct species. The fungus is widely distributed in India on several hosts.

<sup>1</sup> These numbers refer to the bibliography on pp. 174-200, the page of the cited work being given after the colon.

- Woroninella aecidioides** (Peck) Syd. (Sacc. XXIV:17 ; 445:485). In leaves of *Amphicarpaea edgeworthii*, Simla, India. Gäumann (245:172) prefers the name *Synchytrium aecidioides* (Pk) Lagerh.
- dolichi** (Cke) Syd. (Sacc. XXIV:17 ; 445:484). In living leaves of *Dunbaria ferruginea*, Runnymede, Madras (McRae). (This fungus is known in other countries on *Dolichos gibbosus*, *Glycine javanica*, and *Vigna sinensis*). Gäumann (245:172) favours the name *Synchytrium dolichi* (Cke) Gm.
- puerariae** (P. Henn.) Syd. (Sacc. XXIV:17 ; 445:486). In leaves and stems of *Pueraria* sp., India.

## PHYCOMYCETES.

## CHYTRIDIALES.

- Nowakowskiella ramosa** Butler (94:141, figs. ; Sacc. XXI:847). On decayed leaves and culms of *Triticum*, Dehra Dun (Butler).
- Physoderma schroeteri** Krieger (Sacc. XIV:447 ; 453:510). In radical leaves of *Scirpus supinus*, Pusa (Butler) ; in *S. sp.*, Lahore (B. Das). The Indian specimens are very similar to the form on *S. maritimus* in Germany.
- zeae-maydis** Shaw (455:245, figs. ; Sacc. XXIV:20 ; 3:24 ; 113 (19)). (Perhaps a synonym of *P. maydis* Miyabe). In living leaves of *Zea mays*, Duars, Bengal (Shaw) ; Pusa (McRae). This fungus has been found to cause a serious disease of maize in the United States of America.
- Urophlyctis alfalfae** (Lagerh.) Magn. (Sacc. XVII:515). On *Medicago sativa* and *Vicia hirsuta*, Lahore (B. Das).

## OOMYCETES.

- Achlya polyandra** (Hildebr.) de Bary (Sacc. VII:275 ; 453:511). On decomposing insects under water, Pusa (Butler).
- Allomyces arbuscula** Butler (103:1027 ; Sacc. XXIV:32). In still water and river water, on dead insects from a drain, and from garden soil cultures on boiled ants, Pusa (Butler). Also obtained from Poona.
- Aphanomyces laevis** de Bary (Sacc. VII:276 ; 453:511). On decomposing insects under water, Pusa (Butler).
- Bremia lactucae** Regel (Sacc. VII:244 ; 453:512). On *Lactuca dissecta*, Dehra Dun (Butler) ; *L. scariola*, Kashmir (Butler) ; *L. sp.*, Lyallpur (Mitter) ; Mussoorie (Butler) ; Lahore (Mitra) ; *Larumaea nudicaulis*, Lyallpur (Butler) ; *Sonchus oleraceus*, Punjab (B. Das) ; *Conyza* sp., Samalkota (Subramaniam).
- Cystopus biliti** (Biv.) de Bary (Sacc. VII:236 ; 453:514). On leaves of the following Amaranthaceae : *Achyranthes aspera*, Coorg, Surat, Shillong, Sylhet, and Dehra Dun (Butler) ; Kumaon (Inayat) ; *A. sp.*, Dehra Dun, Sylhet, and Pusa (Butler) ; Coimbatore (Subramaniam) ; *Dacca* (Som) ; *Alternanthera sessilis*, Pusa, Gauhati, and Sylhet (Butler) ; *A. triandra*, Bombay (Dastur) ; *A. sp.*, Chittagong (R. Sen) ; *Dacca* (Som) ; *Amaranthus*

*blitum*, Malda and Kashmir (Butler); Peshawar (Dastur); *A. paniculatus*, Kanaighat, Sylhet (Butler); *A. tristis*, Pusa (Butler); *A. viridis*, Pusa, Gauhati, Surat (Butler); *A. sp.*, Burma (Dastur); *Digera arvensis*, Malda, Lyallpur, Pusa (Butler); Dohad Farm, Bombay (Kulkarni); Coimbatore (Subramaniam); Godavari (R. Sen). The form on *Amaranthus blitum* was considered by Zalewski (Bot. Centralbl. XV, p. 223, 1883) to be different from that on the other hosts, the latter being named *Cystopus amaranthacearum*. Subsequent mycologists have not followed Zalewski, and although the differences he mentioned are noticeable in the Indian forms, they are of doubtful specific value. *Coleosporium deeringiae* Pat. (361:123) is considered by Sydow (442, III:656) to be a *Cystopus*, apparently *C. bliti*. It was recorded on leaves of *Bosea (Deeringia) anherstiana* in India.

[*Cystopus*] *candidus* (Pers.) Léveillé (Sacc. VII:234; 453:513; 455:243; 445:484 111:292, 295, figs.). On the following Cruciferae: *Brassica campestris*, Pusa and Kashmir (Butler); *B. campestris* var. *toria* (*B. napus* var. *dichotoma* Prain), Kangra, Punjab (Mitter); *B. nigra*, Gauhati (N. C. Das); *B. sp.*, Kashmir (Butler); *Capsella bursa-pastoris*, Dehra Dun (Butler); *Cleome viscosa*, Dehra Dun (Butler); *Eruca sativa*, Lyallpur; Srinagar; and Nagina, United Provinces (Butler); *Gynandropsis pentaphylla*, Godavari (McRae); *Nasturtium palustre*, Kashmir (Butler); *Raphanus sativus*, Dehra Dun (Butler).

—*ipomoeae-panduratae* (Schw.) Stevens & Swingle (Sacc. IX:341; 453:514).

On *Ipomoea eriocarpa*, Achibal, Kashmir; Pusa; Dohad Farm, Bombay (Butler); *I. hederacea*, Dehra Dun (Inayat); Pusa (Butler); Poona (Ajrekar); Simla (Watt); *I. reniformis*, Samalkota (Barber); Surat, Dharwar, Akola Farm, and Hoshangabad (Butler); Gujrat (Burkill); Nagpur (Pandit); Bombay (Chibber); *I. sp.*, Pusa (Butler); Kistna Dist. (Subramaniam). The form on *I. reniformis* causes marked deformity of the host plant, transforming it from a dorsiventral to a radial habit. That on *I. hederacea* does not produce this effect. Sydow (442, IV:569) considers it clear from the description that *Uredo ipomoeae* Barclay (43:228) is *C. ipomoeae-panduratae*.

—*platensis* Spg. (Sacc. XI:212; 453:514). On leaves of *Boerhaavia repens*, Dehra Dun, Gauhati, Surat, Sibpur near Calcutta, and Ganjam (Butler); Godavari (S. N. Mitra). This species has been separated from *C. bliti* by American authors, because of apparent constant differences in the size of the areolae on the oospore wall. In the Indian material there is no constant difference, and it is doubtful that the two species can be kept separate.

—*portulacae* (DC.) Léveillé (Sacc. VII:235; 453:513; 111:319, fig.; 445:485). On leaves of *Portulaca oleracea*, Dehra Dun (Inayat); Srinagar (Butler); on *P. quadrifida*, Malda, Bengal and Bassein, Burma (Butler); Coimbatore (McRae).

- Cystopus] tragopogonis** (Pers.) Schroeter (Sacc. VII:234 ; 453:513 ; 455:243). On leaves of *Cirsium arvense*, Lyallpur (Butler); *Crepis glauca* and *Serratula pallida*, Harwan, Kashmir (Butler).
- Dictyuchus monosporus** Leitgeb (Sacc. VII:273 ; 453:511). On dead plant fragments under water, Dehra Dun (Butler).
- Peronospora affinis** Rossm. (Sacc. VII:251). On *Fumaria parviflora*, Pusa (Butler).
- arborescens** (Berk.) de Bary (Sacc. VII:251 ; 3:26 ; 453:512 ; 111:344-5, figs. ; 191:24, figs.). On leaves of *Papaver somniferum* throughout Bihar and United Provinces; on *Argemone mexicana*, Pusa (Butler); Saharanpuz (B. Das).
- celsiae** Sydow (455:245 ; Sacc. XXIV:60). On leaves of *Celsia coromandilina*, Pusa (Butler).
- chlorae** de Bary (Sacc. VII:247). On *Erythraea roxburghii*, Pusa (Butler).
- effusa** (Grev.) Rabenh. (Sacc. VII:256 ; 453:512 ; 111:317, fig.). On leaves of *Chenopodium album*, Pusa, Lyallpur, Nagina, Cawnpore; Harwan, Kashmir and Myingyan, Burma (Butler); Peshawar (Shaw); Jullundur (Mitter).
- indica** Sydow (443, XVI:157, fig. ; Sacc. XXIV:59 ; 453:513 as *P. ? linariae* Fekl). On leaves of *Calceolaria scabiosaefolia*, Dehra Dun (Butler).
- lamii** Braun (Sacc. VII:256 ; 455:245). On leaves of *Plectranthus rugosus*, Verinag, Kashmir (Butler).
- parasitica** (Pers.) de Bary (Sacc. VII:249 ; 453:512 ; 455:245 ; 111:292, 299, figs.). On various Cruciferae: *Brassica campestris* and its cultivated varieties, Pusa and Kashmir (Butler); Lahore (Mittra); *B. juncea*, Dacca (Som); *B. napus*, Pusa (Butler); *Capsella bursa-pastoris*, Dehra Dun (Butler); *Eruca sativa*, Pusa and Lyallpur (Butler); *Raphanus sativus*, Dehra Dun (Butler); *Sisymbrium irio*, Peshawar (Shaw).
- rumicis** Corda (Sacc. VII:262 ; 445:484). On leaves of *Rumex vesicarius*, Coimbatore (McRae); Bombay (Ajrekar).
- trifoliorum** de Bary (Sacc. VII:252 ; 453:513 ; 455:245 ; 111:266, fig.). On leaves of *Glycine hispida*, Larkipur, Kashmir (Butler); *Medicago denticulata*, Lyallpur (Butler); *M. lupulina*, Pusa and Dehra Dun (Butler); *M. sativa*, Sargoda, Punjab (Goldon); *Melilotus alba*, Pusa (Butler); *M. indica*, Orai, United Provinces; Lyallpur; and Pusa (Butler); *M. parviflora*, Jullundur; Gujranwala (Mitter). The form on the soy-bean in Manchuria and the United States has been regarded as a distinct species, *P. manshurica* (Naoum.) Gäumann, but the downy mildew of this crop in Kashmir agrees more nearly with *P. trifoliorum*.
- viciae** (Berk.) de Bary (Sacc. VII:245 ; 453:513 ; 455:245 ; 111:252, fig.). On leaves of *Vicia hirsuta*, Pusa (Butler); *Lathyrus sativus*, Lyallpur, Pusa, Cawnpore (Butler); *Pisum arvense*, Cawnpore, Pusa (Butler); *P. sativum*

Pusa (Butler); *Trigonella polycerata*, Jullundur (Mitter). R. Maire (Bull. Soc. Hist. Nat. de l'Afrique du Nord, VI, p. 151, 1915) records *Pironospora trifoliorum* as the downy mildew on *Trigonella foenum-graecum*.

**Phytophthora arecae** (Coleman) Pethybridge (382:555; Sacc. XXIV:35, name only; 436, figs.; 333; 354; 353; 92, and 453:512 as *P. ? omnivora*; 122:620, figs., as *P. omnivora* var. *arecae* Coleman; 124; 123, figs.; Sacc. XXI:860 as *P. cactorum* var. *arecae*). On leaves, fruits, and peduncles of *Areca catechu*, Mysore (Butler; Narasimhan); Cochin; and Karwar, Bombay; on nuts and inflorescences of *Cocos nucifera*, Malabar (Sundararaman, 436), and reported on this host also by McRae (113 (19)). Narasimhan (354) recently recorded the following hosts: leaves of *Colocasia antiquorum*, *Bryophyllum calycinum*, *Santalum album*, *Artocarpus integrifolia*, *Mangifera indica*; fruits of *Ficus nitida*, *Jatropha glandulifera*, *Citrus medica*, *C. limonum*, and *Hevea brasiliensis*.

—**colocasiae** Raciborski (Sacc. XVI:396; 453:512; 117; 111:306, figs.). On leaves, petioles, flowers, and corms of *Colocasia antiquorum*, Burma (Dastur); Rangpur (A. Khan); Pusa (McRae); Comilla and Godagiri in Bengal, and Dehra Dun (Butler); on *C. sp.*, Travancore and Burma (Butler); on wounded leaves and stems of seedlings of *Solanum tuberosum* (Pusa).

—**infestans** de Bary (Sacc. VII:237; 111:277, figs.; 87; 199, figs.; 204; 113(17): 53; 191). On all parts of *Solanum tuberosum* and *Lycopersicum esculentum*, Himalayas, Khasi Hills, Plains of Bengal and Assam.

—**meadii** McRae (328:760; 327:254, figs.; 329, figs.; 200; 202, figs.; 111:494, figs.; 113(8):49; 394:6; 393). On leaves, twigs, and fruits, and on the tapping cut, of *Hevea brasiliensis*, southwest India (McRae); Burma (Dastur; Rhind).

—**palmivora** Butler (113(11):82; Sacc. XXIV:36; 332; 429; 271; 94:82, figs., as *Pythium palmivorum* Butler; 92; 96:21; 99; 414, figs.; 415, figs.; 453:511; 111:491, figs., as *Phytophthora faberi* Maublanc; 394:14; 392; 202:226; 123:86 as *P. theobromae* Coleman; discussion of nomenclature by Ashby, Trans. Brit. Myc. Soc., XIV, p. 33, 1929). On leaves and growing points of *Borassus flabellifer*, Godavari and Kistna (Butler); Hoogli District, Bengal (Kar; Sundararaman); South Kanara; On *Cocos nucifera*, Godavari, Kistna, and Travancore (Butler); Malabar (Shaw and Sundararaman); on ? *Areca catechu*, Godavari and Kistna (Butler); on leaves, twigs, and fruit of *Hevea brasiliensis*, Burma (Rhind, 392, 394); on *Theobroma cacao*, and capable of infecting *Lycopersicum esculentum* (Coleman); perhaps this species on fruit of *Oarica papaya*, Hmawbi, Burma. The cause of leaf-fall in *Hevea* rubber in Burma is identified with this species by Rhind, whereas in south India it is due to *P. meadii*; but there is much confusion in the literature of the two species. According to Dastur (202) the Burma and south Indian fungi are probably the same species. The character which led

to this species being first described as a *Pythium* (the discharge of zoospores into a transient bladder) has been found since in *Phytophthora parasitica*, *P. meadii*, and other species. The idea that *P. pulvinora* and *P. faberi* were not distinct (113(12)), has received confirmation in the investigations of Ashby (loc. cit.).

[*Phytophthora*] *parasitica* Dastur (198:226, figs.; Sacc. XXIV:37; 113 (19); 111:326, figs.; 203, figs.; 345, figs.). On leaves and young shoots of *Ricinus communis*, and on seedlings of various plants (*Solanum tuberosum*, *Sesamum*, etc.), Pusa; on *Sesamum indicum*, Saharanpur (B. Das); on *Gossypium* and *Psidium*, Pusa (Mitra; McRae). A physiologic form of this species was also found by Dastur (203) on *Vinca rosea* at Pusa, and inoculations produced infections on a number of other plants, chiefly seedlings. The *Phytophthora* found on *Piper belle*, Central Provinces (Dastur, 209), may be this species.

—*pini* Leonian var. *antirrhini* Sundararaman and Ramakrishnan (437: 99, figs.). On *Antirrhinum majus*, causing collar-rot and wilt, Ootacamund (Sundararaman and Ramakrishnan).

*Plasmopara obducens* Schroeter (Sacc. VII:242; 453:512). On leaves of *Impatiens balsamina*, Kasauli (Butler); Poona (Kulkarni); of *I. sp.*, Dehra Dun (Butler).

—*viticola* Berkeley & Curtis (Sacc. VII:239; 455:244; 3:34; 86). On leaves of *Vitis vinifera*, near Poona (Ajrekar); Madras (Sundararaman); Mandalay (Shroff).

—*wildemania* P. Henn. (Sacc. XXI: 861; 455: 243, fig.). On leaves of *Justicia sp.*, Pusa (Hafiz); Chittagong (R. Sen); on *Periotrophe bicalyculata*, Poona (Ajrekar).

*Pseudoperonospora cubensis* (Berk. & Curt.) Rost. (Sacc. XVI: 520; 113 (3): 54; 455:244; 111:311, figs.; 28, IV:1, figs.). On leaves of *Luffa acutangula*, *L. aegyptiaca*, *Trichosanthes dioica*, and *T. cucumerina*, Pusa (Butler); on *Cucumis melo*, Lyallpur; on *Trichosanthes dioica*, Bengal (Bal).

*Pythium aphanidermatum* (Edson) Fitzpatrick (113(19); 346; 432; 389; probably = *P. butleri* Subramanian, 422, figs.; Sacc. XXIV:1332. Included at first under *P. gracile* Schenk: 94:67, figs.; 111:348, figs.; 453:551; 325). Parasitic on *Zingiber officinale*, Surat (Butler); Rangpur, Bengal (McRae); on *Nicotiana tabacum*, Pusa (Butler); on *Capsicum annum*, Pusa (Butler); on *Carica papaya*, Pusa, Kathiawar, Dacca, Burma (Subramanian); inoculated with infection on *Solanum tuberosum* and *Ricinus communis* (Subramanian). The form on roots of *Ricinus* (94:70) is possibly the same. Other forms which are morphologically similar to this species have been more recently found on rotting Cucurbitaceae including *Cucumis sativus*, *Trichosanthes dioica*, *T. anguina*, *Luffa acutangula*, *L. aegyptiaca*, and *Lagenaria vulgaris*, at Pusa. Some physiologic specialization may occur. Recently recorded on *Amaranthus gangeticus* (5:3), and on *Opuntia dillenii* from which infections were

obtained on the stems of *Cucumis*, *Trichosanthes*, *Datura*, *Solanum*, and *Physalis*, and the leaves of *Amorphophallus* and *Basella* (113(19)). *P. aphanidermatum* appears to be cosmopolitan and to have a very large number of host plants.

[*Pythium*] *artotrogus* (Mont.) de Bary (Sacc. **XI**:244; **94**:100, figs.; **453**:512; **113**(17):54). In rotting tubers of *Solanum tuberosum*, Calcutta (from Hooghly) (Butler); Khasi Hills (McRae).

— *de Baryanum* Hesse (Sacc. **VII**:270; **113**(5):66; **106**:262, figs.). On seedlings of *Lepidium sativum* and in garden soil, Pusa (Butler); on seedlings of *Clarkia* and of *Gilia*, Pusa (Dastur).

— *gracile* Schenk (Sacc. **VII**:272; **94**:67, figs., pro parte; **453**:511, pro parte). In rotting plant debris, Calcutta (Butler). Parasitic forms first placed here are now considered to be *P. aphanidermatum*, q. v.

— *graminicolum* Subramaniam (424). On *Triticum vulgare*, associated with discoloration and rot of collar and roots, Dharwar (Subramaniam).

— *indigoferae* Butler (94:73, figs.; Sacc. **XXI**:884; **453**:511). On leaves of *Indigofera arrecta*, Calcutta (Butler).

— *monospermum* Pringsheim (Sacc. **VII**:271; **94**:71, figs.). A saprophytic form found growing on the rotted rhizomes of *Zingiber*, and decaying seedlings of *Lepidium sativum*, Pusa (Butler).

— *proliferum* de Bary (Sacc. **VII**:271; **94**:76, figs.; **453**:511). On decomposing insects under water, Calcutta, Dehra Dun, and Pusa (Butler); on seeds of *Ricinus*, Pusa.

*Saprolegnia monoica* (Prings.) de Bary (Sacc. **VII**:268; **453**:511). On decomposing insects under water, Dehra Dun (Butler).

*Sclerospora graminicola* (Sacc.) Schroeter (Sacc. **VII**:238; **95**, figs.; **278**, figs.; **453**:513; **445**:326; **111**:50, 89, 218, figs.; **455**:245; **515**). On leaves and inflorescences of *Setaria italica*, Pusa, Kashmir, and Dharwar (Butler); Godavari (Mitra); Wynaad (McRae); on *Pennisetum typhoideum*, Trichinopoly, Dharwar, Poona, Surat, Orai (Butler); Bombay (515); and throughout northern India.

— *graminicola* var. *andropogonis-sorghii* Kulkarni (278:268, figs.; **111**:203, fig.) On leaves of *Andropogon sorghum*, Coimbatore (Butler; Barber); Poona (Kulkarni); Bombay (Chibber); Dharwar (Butler); and Burdwan; on leaves of *A. halepensis*, Kirkee, near Poona (Barber); on *Euchlaena mexicana* (*E. luxurians*), Kirkee (S. N. Mitra). W. H. Weston (Journ. Agric. Res., **XXVII**, p. 781, 1924) gives good reasons for considering this to be a distinct species.

— *indica* Butler, nom. nov. (107:279, figs., as *S. maydis* (Racib.) Butler; Sacc. **XXIV**:66; **3**:22; **111**:191, fig.; **113**(19)). On leaves of *Zea mays*, Pusa (Butler), Poona (Ajrekar). The fungus described by Raciborski under the name *Peronospora maydis* (see Sacc. **XIV**:460), with which the Indian species was, at first, considered identical, has been shown by Palm (Meded. Labora-

torium Plantenziekten, Buitenzorg, No. 32, 1918) to be a *Sclerospora* distinct from the Indian maize downy mildew. Palm gave it the new name, *S. javanica*, but under the International Rules Raciborski's specific name "maydis" should stand and the Javan fungus should have been called *S. maydis* (Racib.) Palm. A new name has, therefore, to be given to the Indian species.

ZYGOMYCETES.

- ioanephora cucurbitarum* (Berk. & Rav.) Thaxter (Sacc. XVII:507; 207, figs.). On leaves, stems, and flowers of *Capsicum* spp., Pusa (Dastur).
- infundibulifera* (Currey) Cunningham (187:417; Sacc. IX:339; 190:163, figs.; 195:333, figs., as *Cunninghamia infundibulifera* Currey; 195:578 as *Ochoanephora cunninghamiana* Currey; 455:248). On flowers of *Hibiscus rosa-sinensis*, Calcutta (Cunningham); Pusa (Butler); on inflorescence of *Tabernaemontana coronaria*, Pusa (Butler).
- simsoni* Cunningham (190:169, figs.; Sacc. XIV:432; 453:515). Parasitic on *Ipomoea rubro-cucurlea*, Calcutta (Cunningham); on living flowers of *Zinnia elegans*, Calcutta (Cunningham); Pusa (Butler); Poona (Chibber).
- cunninghamella elegans* Lendner (Sacc. XXI:828; 113(7):56). In soils, Pusa (Shaw).
- empusa lecanii* Zimmermann (125; 375, XI). On *Lecanium viride*, *L. colemanii*, etc. on *Coffea* and *Psidium guajava*, South India (Coleman); Kotagiri, Nilgiris (Anstead). Petch (l. c.) has failed to find a true *Empusa* on any of the specimens (including Indian collections) examined by him, but found a mycelium of fine, hyaline, non-septate hyphae, bearing pyriform conidia which eventually became fuscous or pale brown and germinated either by one or two germ-tubes or by the protrusion of the spore contents into a globose vesicle which in some cases has a thick wall and appears to be persistent. It is suggested that this is the fungus described by Zimmermann, and that it is a *Pythium* or allied genus.
- muscae* Cohn (Sacc. VIII:281). On house-flies, Lahore (B. Das).
- tomophthora aphidis* Hoffm. (Sacc. VII:283). On *Aphis* sp., Lahore (B. Das); on *Aphis* on *Pisum sativum*, Pusa (Dutt).
- cor glomerula* Lendner (Sacc. XXI:821; 461). From the soil in Madras (Thakur and Norris).
- plumbeus* Bonorden (Sacc. VII:194; 461). From the soil in Madras (Thakur and Norris).
- praini* Nechitsch (355, figs.; Sacc. XXI:818; 267:147; 113(6):58; 111:14, fig.). In fermenting rice, Sikkim (recorded by Nechitsch); Ranchi, Chaibassa, Balasore, Rajmahal, Danka, Sambalpur (Hutchinson and Ayyar).
- racemosus* Fresenius (Sacc. VII:192; 461). From the soil, Madras (Thakur and Norris).



- Rhizopus artocarpi** Raciborski (Sacc. **XVI**:386 ; **344**). On *Artocarpus integrifolia*. Benares (Dastur); Pusa (Shaw); Andaman Islands (Mitra). This species is considered by Lendner (Les Mucorinées de la Suisse, 1908, p. 116) to be "une forme vigoureuse du *R. nigricans*."
- cambodja** (Chrzas.) Vuillemin (Sacc. **XVII**:503 ; **355** ; **267**:147 ; **113**(6):58). In fermenting rice, Darjeeling (Hutchinson and Ayyer); Khasi Hills.
- nigricans** Ehrenberg (Sacc. **VII**:212 ; **461**). From soil, Madras (Thakur and Norris).

## ASCOMYCETES.

## HEMIASCOMYCETES.

- Blastocystis hominis** Brumpt (275). Knowles and Das Gupta, who studied this organism from human patients at the Calcutta School of Tropical Medicine, consider it to be allied to the *Schizosaccharomycetes*.
- Nematospora coryli** Peglion (Sacc. **XVIII**:202 ; **396**). Recorded by Rhind [as "Nowell's form D," which Ashby and Nowell recently recorded (Ann. Bot., XL, pp. 69-83, 1926) as *N. coryli*] as an internal disease of unripe bolls of *Gossypium* in Burma, in which rotting of the contents of affected fruits ensued.
- gossypii** Ashby & Nowell (396). Recorded by Rhind (as "Nowell's form C") as being more common than the preceding in affected bolls of *Gossypium* in Burma.
- Protomyces macrosporus** Unger (Sacc. **VII**:319 ; **454**:372 ; **111**:359, figs.). Common in living green parts of *Coriandrum sativum*, Pusa (Sen); Lahore (B. Das).
- Pseudosaccharomyces indicus** Kloecker (272:335, fig.; Sacc. **XXIV**:1310). From soil, Himalayas; characters of the fungus described by Kloecker from cultures in beer-wort.
- Saccharomyces cerevisiae** Meyen (Sacc. **VIII**:916). In the usual fermentation processes.
- Taphrina aurea** (Pers.) Fr. (Sacc. **VIII**:812 ; **454**:373). On leaves of *Populus ciliata*, Murree (Butler).
- cornu-cervi** Giesenhagen (246:135, figs.; Sacc. **XI**:437). In fronds of *Aspidium aristatum*, Nepal (Wallich); Coonoor (Gamble). "*Aspidium cornu-cervi*" is based on ferns affected by this fungus, and *Urobasidium rostratum* occurs on the galls produced by it.
- deformans** (Berk.) Tul. (Sacc. **VIII**:816 as *Exoascus deformans* (Berk.) Fekl ; **454**:372 ; **113**(9):66 ; **113**(10):74 ; **2**:44 ; **230**). On leaves of *Prunus persica*, Shillong (Butler); Ranchi (Dobbs); Peshawar (Shaw); Mussoorie (Butler); Kashmir (230). The disease on *Nephetium litchi* at Calcutta attributed by Bal (28, II:4) to this species is an erineum caused by a mite of the genus *Eriophyes*.

- aphrina] laurencia** Giesenhagen (246:150, figs.; Sacc. **XI**:437; **111**:89, fig.). On fronds of *Pteris quadriaurita*, Assam (Simons).
- maculans** Butler (102:36, figs.; Sacc. **XXIV**:1303; **111**:48, 347, figs.). On leaves of *Curcuma amada*, Saharanpur (Gollan); *C. angustifolia*, Kumaon (Inayat); Comilla (Butler), *C. longa*, Dehra Dun, Pusa, Poona, Surat (Butler); Samalkota (Subramaniam); Birbhum (Basu); Godavari (Shaw); Rangpur (Mitra); *Hedychium* sp., Mussoorie (Butler); *Zingiber cassumunar*, Rangpur, Bengal (Butler); *Z. zerumbet*, Bihar (Butler).
- pruni** (Fekl) Tul. (Sacc. **VIII**:817 as *Ezoascus pruni* Fekl; 454:373; **111**:86, fig.). On fruit of *Prunus padus*, Murree (Butler); Simla (Watt). *Cerasus cornuta* Wall. is based on the elongated fruit caused by this parasite (cf. Gardeners' Chronicle, 1850, p. 406) and not, as stated in Hooker's Flora of British India, II, p. 316, on deformities caused by insects.
- rhomboidalis** Sydow & Butler (454:373, fig.; Sacc. **XXIV**:1303). On fronds of *Pteris quadriaurita*, Kumaon (Inayat).

# DISCOMYCETES.

- aurina orientalis** (Patouill.) Sacc. & Sydow (Sacc. **XXII**:720 as *Sarcosoma*; 454:374). On cow dung, Pusa (Butler).
- scobolus gollani** P. Henn. (263:338; Sacc. **XVIII**:119). On manured ground under trees, Botanic Garden, Saharanpur (Gollan).
- ilographum pandani** Cke (133:17, fig.; Sacc. **II**:729). On *Pandanus odoratissimus*, India (Hobson).
- vagum** Desmaz. (Sacc. **II**:727; 130:75). On coriaceous leaves, Himalayas (Fleming). "Without fruit, but probably this species," Cooke (130).
- ulgaria chalybea** (Berk. in Herb.) Cke & Mass. (173:74; Sacc. **X**:41; 57, after No. 359, as *B. inquinans* var. *chalybea* Berk.). On trunks of trees, Jallapahar, Darjeeling, alt. 7500 ft. (Hooker f.).
- nangium chrysoprasum** Cke (183:74; Sacc. **XI**:423). On naked wood, India.
- lorosplenium aurigeneum** (Berk.) Sacc. (Sacc. **VIII**:318; 57, No. 474 as *Peziza aurigenea* Berk.). On dead wood, Khasi Hills (Hooker f. & Thomson).
- aeruginosum** (Oeder.) de Not. (Sacc. **VIII**:315; 319, **III**:153). On fallen wood, Mandalai, Jaunsar, 8-9,000 ft. (Duthie).
- ccomyces vilis** Syd. & Butler (454:377; Sacc. **XXIV**:1267). On leaves of *Mangifera indica*, Malda (Butler).
- ryptomyces pongamiae** (Berk. & Broome) Sacc. (Sacc. **VIII**:708; 454:376). On leaves of *Pongamia glabra*, Islampur, Bombay (Chibber).
- syscypha aleurodes** Cke (183:73; Sacc. **XI**:413). On palm petioles, Nilgiris.
- clandestina** (Bull.) Fekl (Sacc. **VIII**:457; 57, after No. 357, as *Peziza clandestina* Bull.). Over the upper side of the leaves of a species of *Pyrus*, Tonglo, Sikkim (Hooker f.).

- [*Dasyscypha*] *emerici* (Berk. & Phill.) Sacc. (Sacc. **X**:22; 173:74 as *Lachnella emerici* Berk. & Phill.). On twigs, Nilgiris.
- Elaphomyces sapidus* Massee (319, **XI**:252). United Provinces (Burkill). Edible.
- Erinella corticola* Massee (319, **I**:115; Sacc. **XVI**:756). On bark, Dehra Dun (Gamble).
- Geoglossum?alveolatum* Durand (Sacc. **XVIII**:8 as *Leptoglossum*). On the ground, Simla (Butler).
- *hirsutum* Pers. (Sacc. **VIII**:46; 301:12, figs.). On bare earth, India (Gollan).
- *ophioglossoides* (L.) Sacc. (Sacc. **VIII**:43; 288, No. 65:4; 57, after No. 472, as *G. glabrum* Pers.). On the ground, Yemtung, 13,000 ft. (Hooker f.); India (Kashyap).
- Helotium citrinum* (Hedw.) Fr. (Sacc. **VIII**:224; 57, after No. 359, as *Peziza citrina* Pers.; 196:128). On rotten wood, Sikkim, 8-9000 ft. (Hooker f.); Sikkim, 5-7,000 ft. (Kurz).
- *pusense* Syd. (454:374; Sacc. **XXIV**:1183). On stems of *Ricinus communis*, Pusa (Inayat).
- Helvella crispa* (Scop.) Fr. (Sacc. **VIII**:18; 145:13; 454:374; 288, No. 65:4). On the ground, Punjab (Aitcheson); Achibal, Kashmir (Butler); Simla (Butler); India (Kashyap).
- *?fargesii* Patouill. (Sacc. **XI**:391; 288, No. 65, pp. 4, 8). India (Kashyap).
- Humaria masseeana* Sacc. & D. Sacc. (Sacc. **XVIII**:26; 319, **III**:152 as *H. coccinea* Massee, not (Crouan) Qué!). Garhwal (Gamble).
- *rutilans* (Fr.) Sacc. (Sacc. **VIII**:133; 196:128). On mud banks, Toukyeghat River, Toungoo, Burma (Kurz).
- Lachnea geneospora* (Berk.) Sacc. (Sacc. **VIII**:178; 57, No. 357, as *Peziza geneospora* Berk.). On rotten wood, Sinchul, Sikkim, 8,000 ft. (Hooker f.).
- Lachnella nilgherrensis* Cke (173:73; Sacc. **X**:20). On herbaceous stems, India (Herb. Berkeley).
- Lagerheima carteri* (Berk.) Sacc. (Sacc. **X**:55; 173:75 as *Patellaria carteri* (Berk.) Phill.). On dead, decorticated wood, Bombay (Carter).
- Leotia lubrica* Pers. (Sacc. **VIII**:609; 57, after No. 354). On clay banks, Sinchul, Sikkim, 8,600 ft. (Hooker f.).
- Lophodermium hysterioides* (Pers.) Sacc. (Sacc. **II**:791; 349:23 as *Hysterium foliicolum* Fr.). The specimen in herb. Montagne, marked only "Neelgherri [Nilgiris] M. Perrottet" consists of a small coriaceous leaf bearing a very few hysterioid fruit bodies.
- *pinastri* (Schrad.) Chev. (Sacc. **II**:794; 454:378). On needles of *Picea excelsa*, Achibal, Kashmir (Butler). The asci and spores are smaller than in European specimens (454:379).
- Marchalia ustulata* (Cke) Sacc. (Sacc. **VIII**:738; 133:17 as *Rhytisma ustulatum* Cke; 264, No. 499, as *Phyllachora ustulata* (Cke) v. Hoehn.). "On dead leaves, probably of *Ficus*, Col. Hobson" (133). Cooke mentioned that this

fungus occurred on leaves of the same tree which bore "*Trichobasis hobsoni*" (see *Cerotelium fici*). Sydow (442, IV:592) states that an examination of the original material showed that the host is undoubtedly *Ficus*, either *F. infectoria* or *F. religiosa*. Theissen and Sydow (482:450) consider this species to be a conidial form doubtless belonging to *Catacauma infectorium* (q. v.), and that the host is probably *F. infectoria*.

**Midothis macrotis** (Berk.) Sacc. (Sacc. VIII:547; 57, No. 356, as *Peziza macrotis* Berk.; 59:424 and 131, fig. 94 as *Wynnea macrotis* Berk.; 287:934). On rotten wood, Darjeeling, 7,500 ft. (Hooker f.).

**Mitrula rosea** Lloyd (287:885, figs., 955). On bare earth, India (Cave).

—**viridis** (Pers.) Karst. (Sacc. VIII:38; 57, after No. 472, as *Geoglossum viride* Pers.). On the ground, Yeumtong, 12,000 ft.; Lachoong, 3,000 ft. (Hooker f.).

**Morchella bohemica** Krombholz (Sacc. VIII:14; 133:16). On the ground, Kashmir (Herb. Berk.). Cooke notes that it is eaten by the natives, and dried and sent down into the Plains. The same is true for some of the other species, especially *M. deliciosa* which can be regularly bought in the bazaars of the Punjab cities.

—**conica** Pers. (Sacc. VIII:9; 467:158; 263:338). On the ground, Dehra Dun (Blatter); var. **acuminata** Kickx, Siwalik Hills (Gollan).

—**deliciosa** Fr. (Sacc. VIII:10; 128:439; 454:374). On the ground, Kashmir (Naudan); Amritsar and Lahore (Butler); Nepal (Smith); Kumaon (Mittra).

—**esculenta** (L.) Pers. (Sacc. VIII:3; 454:374; 133:16; 520:259). On the ground, Amritsar, and Ranikhet, Kumaon Himalayas (Butler); Kashmir (Aitcheson).

—**gigaspora** Cke (128:442, fig.; Sacc. VIII:14; 131:187). On the ground, Kashmir (Stewart). Recorded by Stewart in his list of Punjab plants as "*M. semilibera*."

**Ombrophila indica** Syd. (454:375; Sacc. XXIV:1237). On rotten wood and on the ground, Dehra Dun (Butler).

**Otidea darjeelensis** (Berk.) Sacc. (Sacc. X:4; 57, No. 355, and 131, pl. 215, as *Peziza darjeelensis* Berk.). On the ground, Darjeeling.

**Peziza aurantia** Pers. (Sacc. VIII:74; 57, after No. 356; 196:128). On earth, Sikkim (Kurz); on clay banks, Darjeeling, 7,000 ft., "so conspicuous that every one asks whether you have seen the scarlet fungus" (Hooker f.).

—**epispartia** Berk. & Broome (Sacc. VIII:89; 144:96). Sent to Cooke from Belgaum (Hobson).

**Phacidium symplocinum** Syd. (454:376; Sacc. XXIV:1261). On living leaves of *Symplocos* sp., Darjeeling (McRae).

**Phialea fructigena** (Bull.) Gill. (Sacc. VIII:265; 57, after No. 357, as *Peziza fructigena* Bull.). On stems of dead Umbelliferae, Sikkim, 8-9,000 ft. (Hooker f.).

- Plicaria repanda** (Wahl.) Rehm (Sacc. VIII:100 as *Discina*; 28, III:35-36, figs.).  
On rotten fruits of *Borassus flabellifer*, Calcutta (Bal).
- Pseudopeziza medicaginis** (Lib.) Sacc. (Sacc. VIII:724; 454:375). On leaves of  
*Medicago sativa*, Poona (Ajrekar); of *M. lupulina*, Harwan, Kashmir (Butler).
- **repanda** (Fr.) Karst. (Sacc. VIII:727; 454:375). On leaves of *Galium* sp.,  
Kasauli (Butler).
- **trifolii** (Biv. Bernh.) Fekl (Sacc. VIII:723; 454:375). On leaves of *Tri-  
folium pratense*, Verinag, Kashmir (Butler).
- Pseudophacidium indicum** Syd. (454:375; Sacc. XXIV:1272). On dead branches,  
Dehra Dun (Butler).
- Rhizina reticulata** Berk. & Broome (67, No. 919; Sacc. VIII:58). On wood,  
Nilgiri Hills (E. S. Berkeley).
- **zonata** Berk. (57, No. 473; Sacc. VIII:59). Amongst leaves of *Pinus* sp.,  
Darjeeling (Hooker f.).
- Rhytisma acerinum** (Pers.) Fr. (Sacc. VIII:753; 454:377). On leaves of *Acer  
cacsium*, Harwan, Kashmir (Butler); Darjeeling (McRae).
- **conoideum** Cke (133:16; Sacc. VIII:761). On leaves, India (Hobson). "With-  
out fruit."
- **durissimum** Cke (133:16; Sacc. VIII:761). On coriaceous leaves, India  
(Hobson). "No fruit."
- **fuscum** Fr. (238:551; Sacc. VIII:759). On leaves of Sapindaceae, India  
(Rudolphi).
- **himalense** Syd. & Butler (454:377, fig.; Sacc. XXIV:1266). On leaves of  
*Ilex* (probably *I. dippyna*), Ranikhet, Kumaon Himalaya (Butler).
- **lagerstroemiae** Rabenh. (387:31, name only; Sacc. VIII:764; 445:489).  
On upper surfaces of leaves of *Lagerstroemia* sp., Central India (Kurz); Bel-  
gaum, Bombay (Ajrekar); of *L. lanceolata*, Coimbatore.
- **piceum** Berk. (57, No. 475; Sacc. VIII:761; 454:378). On living leaves of  
*Picris*, Tambur Valley, Nepal (Hooker f.); Ranikhet, Kumaon (Butler);  
of *P. ovalifolia*, Nepal (Burkill).
- Saccobolus kerverni** (Crouan) Boud. (Sacc. VIII:524; 454:374). On horse-dung,  
Pusa (Butler).
- Sarcoscypha macropus** (Pers.) Lamb. (Sacc. VIII:28 as *Helvella*; 288, No. 65:4).  
India (Kashyap). A species of *Sarcoscypha* is also discussed in 467:158.
- Sclerotinia cinerea** (Bon.) Schroet. (Sacc. IV:34 as *Monilia*; 230). On *Prunus  
persica*, Kashmir. The correctness of this determination is doubtful and the  
identity of the brown rotting fungi of fruits in the Himalaya has still to be  
worked out. They have not been found on orchard fruits in the Plains of  
India.
- **ricini** Godfrey (3:26). On inflorescence and fruits of *Ricinus communis*, Mysore  
(Narasimhan).

**Sclerotinia sclerotiorum** (Lib.) de Bary (Sacc. XXII:644 as *S. sclerotiorum* (Lib.) Sacc. & Trott. ; 270, figs. ; 413:177, figs., as *Rhizoctonia napi* Westend.) On *Brassica campestris* var. *sarson*, *Carthamus tinctorius*, *Amaranthus tristis*, *Argemone mexicana*, *Avena sativa*, *Beta bengalensis*, *Brassica campestris* var. *glauca*, *Calamintha* sp., *Cannabis sativa*, *Chenopodium album*, *Cicer arietinum*, *Cirsium arvensis*, *Fumaria parviflora*, *Hordeum vulgare*, *Lathyrus sativus*, *Lens esculenta*, *Leucas* sp., *Linum usitatissimum*, *Medicago lupulina*, *Pisum sativum*, *Scoparia dulcis*, *Triticum vulgare*, *Vicia hirsuta* (Shaw and Ajrekar ; Joshi). Joshi found, by inoculation, that several other plants could be infected.

**Trichocoma paradoxa** Junghuhn (Sacc. X:82 ; 232:161, figs. ; 57, No. 551, and after No. 455 ; 196:128 ; 287:1205, fig.). East Nepal (Hooker f.) ; on dry dead wood, Sikkim, 7-9,000 ft. (Hooker f.) ; on mossy dead sticks, Sikkim Himalaya (Kurz). This fungus is often considered to be allied to the Tuberales, but Fischer (232 ; 233:196) places it in the Plectascaceae, as does Dodge (226:151).

**Triblidiella rufula** (Spreng.) Sacc. (Sacc. II:757 ; 454:375). On dead branches of *Citrus* sp., Sagaing, Burma (Butler) ; on dead branches, Puliyanur, Travancore (Butler) ; Dehra Dun (Inayat) ; Pusa (Butler) ; Bassein, Bombay (Kulkarni) ; and Tellicherry, Malabar (Butler).

**Tuber indicum** Oke & Massee (180:67 ; Sacc. XI:444). In the earth, Mussoorie (Duthie).

**Vibrissea stilboidea** (Berk.) Sacc. (Sacc. VIII:53 ; 57, No. 359, as *Peziza stilboidea* Berk.). On the main nerves of leaves of *Pyrus*, Tonglo, Sikkim (Hooker f.).  
**turbinella** (Berk.) Sacc. (Sacc. VIII:52 ; 57, No. 358, as *Peziza turbinella* Berk.). On the lower surfaces of leaves of *Pyrus*, Tonglo, Sikkim (Hooker f.).

## PYRENOMYCETES.

**Acanthostigma heterochaete** Sydow & Butler (454:403 ; Sacc. XXIV:971). On living leaves of *Phaseolus mungo* var. *radiatus*, Pusa (Butler) ; of *Dumasia villosa*, Pusa (Butler) ; Nagpur (Pandit) ; of *D. sp.*, Samalkota (Shaw) ; Dacca (Som) ; of *Alysicarpus vaginalis* var. *nummularifolia*, Samalkota (Shaw).

**Acanthostoma wattii** (Syd. & Butler) Theiss. (469:45 ; 472:1285 ; 454:383 as *Dimerium wattii* Syd. & Butl. ; Sacc. XXIV:256 ; 468:188). On *Asterina camelliae* on leaves of *Thea sinensis*, Assam (G. Watt) ; Darjeeling (McRae).

**Acrosporum parasiticum** Syd. (454:379 ; Sacc. XXIV:1128). On living or fading leaves of *Heptapleurum venulosum*, Kumaon (Inayat).

**Allescherina boehmeriae** Syd. & Butler (454:413 ; Sacc. XXIV:734). On dead stems of *Boehmeria nivea*, Pusa (Inayat).

- [*Allescherina*] *cajani* Syd. & Butler (454:413 ; Sacc. XXIV:733). In the bark of branches of *Cajanus indicus*, Pusa (Butler).
- Amphisphaeria khandalensis* Rehm (467:158 ; Sacc. XXIV:940). On *Bambusa*, Khandala, Bombay (Blatter).
- Anthostoma carteri* (Berk. & Cke) Berl. & Vogl. (Sacc. IX:520 ; 153:51 as *Fuckelia carteri* Berk. & Cke). On bark, Bombay (Carter).
- Anthostomella bambusae* (Lév.) Sacc. (Sacc. I:289 ; 285:50 as *Sphaeria bambusae* Lév. ; 57, after No. 485, as *Hypopteris bambusae* (Lév.) Berk.). On dead stems of bamboo [*Bambusa* ? *arundinacea*], Nangki Hills, 6,000 ft. (Hooker f.).
- pandani* (Rabenh.) Sacc. (Sacc. I:292 ; 387:45 as *Sphaeria pandani* Rabenh.). On leaves of *Pandanus furcatus*, Calcutta. Pycnidia also present.
- Apiospora camptospora* Penzig & Sacc. (Sacc. XIV:534 ; 454:402). On leaf sheaths of *Saccharum officinarum*, Bilin, Burma (Butler).
- indica* Theiss. & Syd. (481:420 ; Sacc. XXIV:612 ; 454:402 as *A. montagnei* Sacc. ; 57, after No. 485, as *Hypopteris apiospora* (Mont.) Berk.) On culms of *Bambusa*, Nangki Hills (Hooker f.) ; Wynaad and Dehra Dun (Butler). The identity of the fungus recorded by Berkeley (57) is uncertain (481:419).
- rhodophila* Sacc. (Sacc. XIV:534). On *Rosa macrophylla*, Garhwal, 11-12,000 ft. (Duthie).
- Asterina balii* Syd. (443, XVII:308). On leaves of *Alangium lamarckii*, Bhubaneswar, Orissa (Bal).
- camelliae* Syd. & Butler (454:389, figs. ; Sacc. XXIV:474 ; 111:463, figs. ; 473:83, fig.). On leaves of *Thea sinensis*, Dunmar Dulling, Sibsagar Dist., Assam (Watt).
- cansjerae* Ryan (401:103). On *Cansjera rheedii*, Dharwar (Sedgwick).
- carbonacea* Cke (144:96 ; Sacc. I:42 ; 473:69). On coriaceous leaves, Belgaum (Hobson).
- celtidicola* P. Henn., var. *capparidis* (Syd. & Butler) Theiss. (473:94 ; 454:390 as *A. capparidis* Syd. & Butler ; Sacc. XXIV:446). On leaves of *Capparis* sp., Madras (Butler).
- [—*cincta* Berk. (57, No. 477 ; Sacc. I:43). On leaves of *Camellia*, Khasi Hills (Hooker f. & Thomson). According to Theissen (468:188), this is a mixture of *Asterina camelliae* and *Acanthostoma wattii* (q.v.), and being wrongly described should be deleted.]
- [—*concentrica* Cke (161:13 ; Sacc. IX:377 as *Asterula concentrica* (Cke) Sacc.). On culms of *Saccharum*, N. W. India. Theissen (468:13 ; 473:24) found this to be an undeterminable, unripe member of the Dothidiaceae.]
- congesta* Cke emend. Theiss. (144:95 ; Sacc. I:42 ; corrected diagnosis in 468:198 ; 368, I:62 ; 473:99, fig. ; 445:488). On leaves of *Santalum album*, Belgaum (Hobson) ; Malabar (McRae).
- crebra* Syd. (445:327 ; Sacc. XXIV:463). On leaves of *Opilia amentacea*, Coimbatore (Fischer).

- [*Asterina*] *delicatula* Syd. & Bal (443, XVII: 308). On leaves of *Aegle marmelos*, Hooghly, Bengal (Bal).
- *holarrhenae* Ryan (401:103). On upper surfaces of leaves of *Holarrhena antidysenterica*, Assam (Subramaniam).
- *indica* Syd. (454:390 ; Sacc. XXIV:473 ; 473:86, fig.). On leaves of *Symplocos* sp., Darjeeling (McRae).
- *lawsoniae* P. Henn. & Nyman (Sacc. XVI:646 ; 454:391 ; 18:179 ; 473:81, figs. ; 445:488). On *Lawsonia alba* (*L. inermis*), Pusa (Butler) ; Bengal (Lafont) ; and various other localities. Arnaud (18:179), from a study of the pycnidial stage, transferred this to *Dimerosporium*. The pycnidia (18:214) (*Asterostomella* (*Hyphaster*) *balusca*) occur commonly (454:391).
- *memecylonicae* Ryan (401:104). On leaves of *Memecylon edule*, Karwar-Bombay (Sedgwick).
- *nothopegiae* Ryan (401:104). Amphigenous on leaves of *Nothopegia colbrookiana*, Mysore (Kulkarni).
- *pleuriporus* Ryan (401:104). Hypophyllous on *Shorea talura*, Siddapur, Kanara (Sedgwick).
- [— *scutellifera* Berk. (57, No. 478 ; Sacc. I:50). On leaves of *Antidesma*, Chittagong (Hooker f. & Thomson). Theissen (468:15) states that the specimen is sterile, and the species should be deleted.]
- *spissa* Syd. (454:392 ; Sacc. XXIV:464 ; 473:61, figs.). On leaves of *Jasminum* sp., Chittagong (Sen) ; of *J. malabaricum*, Bombay (Ajrokar). Arnaud (18:178) has transferred this species to *Dimerosporium*, without having studied it, because he considers it evidently identical with an undetermined *Asterina*-like fungus on *Jasminum pubescens* in which Marshall Ward discovered the first haustoria known in the Microthyriaceae (Quart. Journ. Microsc. Sci., XXII, pp. 347-354, 2 pls., 1882).
- *travancorensis* Syd. (443, XIII:38). Epiphyllous on *Marsdenia* sp., Pulliyanur, Travancore (Butler).
- Asterinella intensa* (Oke & Mass.) Theiss. (471:120, figs. ; Sacc. IX:382 as *Asterina* ; 401:105). On *Elaeodendron glaucum*, Madras.
- *malabarensis* (Syd.) Theiss. (471:106, fig. ; 454:391 as *Asterina malabarensis* Syd. ; Sacc. XXIV:444). On leaves of *Pothos scandens*, Kanouth, Malabar (Butler).
- *stuhlmanni* (P. Henn.) Theiss. (471:120, fig. ; Sacc. XVII : 881 and 454:392 as *Asterina stuhlmanni* P. Henn.). On leaves of *Ananas sativus*, Thurya Ghat, Sylhet (Butler).
- Asterocystis mirabilis* Berk. & Broome (Sacc. I:293 ; 454:411). On culms of *Bambusa* sp., Bulsar, Bombay (Chibber) ; Tellicherry, Malabar (Butler).
- Balansia andropogonis* Syd. (454:395 ; Sacc. XXIV:697). On inflorescence of *Andropogon aciculatus*, Forbesganj, Purnea Dist., Bihar (Burkill) ; Chitta-



gong (Sen); Sylhet and Noakhali (Butler); Assam (Burkill). Sydow states that *Ephelis pallida* Patouill., common in Tonkin and the Philippines, is doubtless the conidial stage.

[*Balansia*] *sclerotica* (Pat.) v. Hoehn. (264, No. 704; Sacc. IX:1002 as *Epichloe*; 454:402 as *Ophiodothis sclerotica* (Pat.) P. Henn.). On inflorescence of *Andropogon nardus*, Erramacola, Wynaad (McRae); of *A. schoenanthus*, Vayitri, Wynaad; (Butler); of *A. sp.*, Chatrapur, Ganjam (Butler); of *A. contortus*, Belgaum (Butler); on *Apluda aristata*, Dehra Dun (Butler); on *Panicum distachyum*, Coimbatore (McRae); on *P. sp.*, Bangalore (Butler).

—*thanatophora* (Lév.) v. Hoehn. (264, after No. 630; 57, No. 485, as *Dothidea vorax* Berk. & Curt.; Sacc. II:652 as *Ophiodothis vorax* (B. & C.) Sacc.). On deformed spikes of *Carex sp.*, Churra, Khasi Hills (Hooker f.).

A variety (*Ophiodothis vorax* (B. & C.) Sacc. var. *pilulaeformis* (B. & C.) Sacc.) is recorded (445:489) on culms of *Panicum prostratum*, Kistna Dist., Madras (McRae).

*Balladyna butleri* Syd. (454:388, figs.; Sacc. XXIV:373). On culms of *Bambusa sp.*, Khasi Hills, Assam (Butler).

—*gardeniae* Racib. (Sacc. XVI:411). On *Gardenia gummifera*, Siddapur, N. Kanara (Kulkarni). Von Hoehnel (264, No. 482) states that this is not specifically distinct from *Asterina velutina* Berk. & Curt., and makes the combination *B. velutina* (B. & C.) v. Hoehn.

*Boerlagella effusa* Syd. & Butler (454:403; Sacc. XXIV:1023). On wood or decorticated branches of *Populus ciliata*, Mussoorie (Inayat).

*Botryosphaeria agaves* (P. Henn.) Butler (454:415; Sacc. XVII:585 as *Physalospora*). On leaves of *Agave sp.*, Pusa (Butler). Theissen (479:333) states that the Indian species differs from that of Hennings (which was collected in East Africa), and that neither belongs to *Botryosphaeria*.

—*egenula* Syd. & Butler (454:415; Sacc. XXIV:812). On leaves of *Cymbidium luloifolium*, Gauhati, Assam (Butler). Weese (Ber. deut. Bot. Ges., XXXVII, pp. 83-96, 1919) transfers this and many other species of *Botryosphaeria* to *Melanops*.

—*pruni-spinosae* Delacr. (Sacc. XI:295). On *Prunus persica*, Pusa (Butler).

—*tamaricis* (Cke) Theiss. & Syd. (481:663; Sacc. II:590 as *Bagnisiella tamaricis* (Cke) Sacc.; 454:401). On stems of *Tamarix gallica*, Pusa (Inayat).

—*xanthocephala* (Syd. & Butler) Theiss. (479:326; 454:408 as *Physalospora xanthocephala* Syd. & Butler; Sacc. XXIV:800). On twigs of *Cajanus indicus* Pusa (Sen). Von Hoehnel (264, No. 1194) has made this the type of a new genus *Creomelanops*. He considers that *Botryosphaeria inflata* Cke & Massee (at least as found in Java) is probably the same.

*Butleria inaghatahani* Sacc. (403:303; Sacc. XXIV:1134). On leaves of *Vangueria sp.*, Krishnapur, Comilla (Inayat Khan). Saccardo misread the

locality and collector's names, and they are printed "Krishnapone" and "Inaghatahan" respectively. The species name should really be "*inayat-khani*." Petrak and Sydow (385:99) have reported in detail on this genus and species.

***Camillea bacillum*** Mont. (Sacc. I:347; 467:159; 304:3, fig.). On bark, Khandala, Bombay (Blatter).

***Capnodium anonae*** Patouill. (Sacc. XVII:555; 454:384). On leaves and twigs of *Ficus retusa*, *Agave vera-crucis*, and various woods, Bilikere, Mysore, and on leaves of *Ficus retusa*, *F. glomerata*, and *F. bengalensis*, Hassan, Mysore (Butler); on *F. benjamina*, Khed, Bombay (Chibber).

— ***brasiliense*** Puttemans (Sacc. XVII:556; 454:384; 111:487, fig.). On leaves and twigs of *Coffea arabica*, Tuttapullem, Nilgiris (Broek); on leaves of *C. arabica* infested with *Lecanium hemisphaericum*, southern India (Lefroy).

— ***eugeniarum*** Cke (144:96; Sacc. I:78). On leaves of *Eugenia jambos* (*Jambosa vulgaris*), Belgaum (Hobson). Spores unknown.

— ***lanosum*** Cke (144:96; Sacc. I:77). On leaves of *Ficus* sp., Belgaum (Hobson).

— ***pini*** Berk. & Curt. (Sacc. I:75). Recorded on *Pinus excelsa*, Kashmir (Hole). Specimen at Pusa.

— ***ramosum*** Cke (184:76; Sacc. XI:271). On leaves of *Mangifera indica*, India (Herb. Berk.). It is probable that this fungus is really a *Phaeosaccardinula* (*Limacinula*), as the numerous collections of sooty mould of mango in the Pusa Herbarium, from various parts of India, seem to belong to *Phaeosaccardinula*, although they are all more or less immature.

— ***salicinum*** Mont. (Sacc. I:73; 196:130 as *Fumago salicina* Tul.). On leaves of *Sphenodesme eryciboides*, Wa-choung, Yomah, Burma (Kurz). A doubtful record.

***Carnostroma thyrsus*** (Berk.) Lloyd (304:27; 53:384, fig., as *Sphaeria thyrsus* Berk.; Sacc. I:320 as *Xylaria thyrsus* (Berk.) Sacc.; Grev. XIII, pl. 170, fig. 128; 454:418, fig., as *Xylaria excelsa* Syd.). In the Royal Botanic Garden, Calcutta; ? on the ground, Narsinghpur Dist., Central Provinces (Burkill).

***Catacauma acaciae*** Theiss. & Syd. (481:389; Sacc. XXIV:560). Epiphyllous on *Acacia leucophloea*, Coimbatore (McRae); Amritsar (Cheema).

— ***aspidea*** (Berk.) Theiss. & Syd. (481:380; Sacc. II:598 as *Phyllachora aspidea* (Berk.) Sacc.; 454:396). On leaves of *Ficus scandens*, Ranikhet, Kumaon (Butler).

— ***infectarium*** (Cke) Theiss. & Syd. (481:384; Sacc. IX:1013 as *Phyllachora infectoria* Cke; 454:396). Epiphyllous on *Ficus infectoria*, Bilikere, Mysore (Butler); Wynaad (McRae); on *F. religiosa*, Jessore (Bhattacharya); Bandra, Bombay (Dastur); Insein, Burma (Butler). Theissen & Sydow (482:450), state that *Marchalia ustulata* (Cke) Sacc. (q.v.) is a conidial fungus doubtless belonging to this species.

- [*Catacauma*] *microcentrum* (Berk. & Broome) Theiss. & Syd., var. *graphica* Theiss. & Syd. (481:385 ; Sacc. XXIV:562). Epiphyllous on *Ficus mysorensis*, Yelwal, Mysore (Butler). The species was recorded as *Phyllachora ficuum* Niessl (454:395).
- *repens* (Cda) Theiss. & Syd. (481:383 ; 185, IV:42, figs., as *Sphaeria repens* Cda ; Sacc. II:597 as *Phyllachora repens* (Cda) Sacc. ; 454:396 ; 133:16, and 144:95 as "*Dothidea repens* Corda"). On leaves of an unknown tree, India (Helfer) ; of *Ficus religiosa*, Belgaum (Hobson) ; Madras, Comilla, and Royal Botanic Garden, Calcutta (Butler) ; Bombay (Kulkarni) ; on *F. gossypina*, India (Wallich). Theissen and Sydow (481) think that Corda's type, which no longer exists, was perhaps upon *Ficus religiosa*.
- Ceralomyces selinae* Thaxt. (462, V:26 ; Sacc. XVII:918). On prothorax of *Selina westermanni*, India.
- Ceratostomella adiposum* (Butler) Sartoris (93:95, figs., as *Sphaeronema adiposum* Butler ; Sacc. XXII:926 ; 89:47 ; 456:190 ; 111:383, fig.). On planted cuttings and old culms of *Saccharum officinarum* throughout India. Sartoris (Jour. Agr. Res., XXXV, pp. 577-585, 1927) found the supposed pycnospores to be produced in evanescent asci.
- *paradoxa* (de Seynes) Dade (Trans. Brit. Myc. Soc., XIII, p. 191, 1928 ; Sacc. XXII:1341 as *Thielaviopsis paradoxa* (de Seyn.) v. Hoehn. ; 426 ; 433 ; 344 ; 93:32 as *T. ethaceticus* Went). On cuttings of *Saccharum officinarum*, Bengal (Butler) ; on *Cocos nucifera*, *Areca catechu*, *Borassus flabellifer*, and several other hosts infected by inoculation, Madras (Sundararaman) ; on *Cocos nucifera*, Andaman Islands (Mitra). The *Sphaeronema*-like form recorded by Butler (93:40) was doubtless the *Ceratostomella* stage.
- Chaetomium amphitrichum* Corda (185, IV:37, fig. ; Sacc. I:228 ; 454:402). On rotting plants, Tenasserim (Helfer) ; at the base of rotting stems of *Gossypium indicum*, Nagpur (Evans) ; Pusa (Butler).
- *indicum* Corda (185, IV:37, figs. ; Sacc. I:222 ; 132:117). On decayed paper, Moulmein (Helfer) and Tenasserim.
- *psetosum* Wint. (Sacc. IX:484 ; 384:488). See entry under *Chaetomella furcata* in the *Sphaeropsidales*.
- Chaetosphaeria indica* Niessl (356:98 ; Sacc. II:96). On leaves of *Alangium lamarkii* (*A. decapetalum*), Calcutta (Kurz). Niessl states that the habit is like a *Capnodium*, and Saccardo observes that it may therefore be a *Meliola*.
- Clematomyces pinophili* Thaxt. (462, II:440 ; Sacc. XVI:692). On the inferior surface of *Pinophilis* sp., Burma.
- Clypeosphaeria?* *crenulatum* (Berk.) Sacc. (Sacc. II:91 ; 57, No. 484, as *Hypoxyton crenulatum* Berk.). On dead stems of *Bambusa*, Nangki Mountains, 6000 ft. (Hooker f.).
- Cordyceps falcata* Berk. (57, No. 479, fig. ; Sacc. II:575 ; 375, IV:36, fig.). On a dead caterpillar, Myrong, Khasi Hills (Hooker f. and Thomson).

- dyceps**] *racemosa* Berk. (57, No. 480, fig.; Sacc. II:576). On a dead caterpillar, Myrong, Khasi Hills (Hooker f. and Thomson).
- ynelia clavata** (L.) Sacc. (Sacc. IX:1073; 57, after No. 487, as *Corynelia "uberiformis* Fr."). On *Podocarpus*, Khasi Hills (Hooker f.).
- fruticicola** (Pat.) v. Hoehn. (Sacc. IX:441 as *Capnodium*; 454:406; 235:240). On fruits of *Myrsine africana*, Mussoorie (Butler).
- ptovalsa indica** Syd. (454:412; Sacc. XXIV:735). On dead branches, Dehra Dun (Inayat).
- planiuscula** Syd. & Butler (454:412; Sacc. XXIV:735). On dead branches, Pusa (Sen).
- rabenhorstii** (Nits.) Sacc. (Sacc. I:190; 454:412). On branches of cultivated *Morus* sp., Pusa (Hafiz).
- surbitaria agaves** Syd. & Butler (454:406; Sacc. XXIV:1055). On leaves of *Agave* sp., Dehra Dun (Butler). Associated with *Microdiplodia agaves*, q. v.
- ldinia concentrica** (Bolt.) Ces. & de Not. (Sacc. I:393; 263:339; 467:159 454:417; 196:130; 349:23 as "*Hypoxyton concentricum* Grev."; 263:339 as *D. gollani* P. Henn.; Sacc. XVII:617; 304:24, figs.). On wood of *Citrus aurantium*, Nagpur (Pandit); on trunks of *Dalbergia sissoo*, Pusa (Dastur); of *Excoecaria ucerifolia*, Dehra Dun (Inayat); on dead branches of *Ficus carica*, Siwalik Hills (Gollan); Bengal (Hutchings); and elsewhere; on *Ixora undulata*, Pusa (Butler); and on old wood in many parts of India. A specimen is in the Montagne Herbarium at Paris, marked "ad truncos emortuos prope Nedoubatta Nelligheri el. Perrottet".
- vernica** (Schw.) Ces. & de Not. (Sacc. I:394; 57, after No. 483, as *Hypoxyton vernicosum* (Schw.); 304:25, fig.). Darjeeling (Hooker f.).
- porthe (Chorostate) curvatispora** Wakef. (519, XXVI:164, fig.). On bark of *Mesua ferrea*, Sibsagar (Hole).
- (Chorostate) taxicola** Sacc. & Syd. (Sacc. XVI:493). A specimen so determined is at Pusa on *Taxus baccata*, Darjeeling.
- trype chlorosarca** Berk. & Broome (Sacc. I:195; 454:415). On dead culms of *Bambusa*, Tellicherry, Malabar (Butler); Palghar, Bombay (Ajrekar); on dead branches, Pullianur in Travancore, and Dehra Dun (Butler); Palghat, Madras (Subramaniam). The form from Palghat has larger stromata and spores, and that from Dehra Dun smaller stromata but larger spores, than the type. It is somewhat doubtful if all belong to the same species (454:415).
- rugosa** Currey (196:130). On hard wood, Yomah, Burma (Kurz).
- homyces hybridus** Thaxt. (462, II:422; Sacc. XVI:678). On *Philonthus* sp. Sylhet.
- ymella kariana** Sacc. (403:301; Sacc. XXIV:909). On dying leaves of *Polygonum* sp. with broad leaves, accompanied by *Puccinia polygoni* and *Darlucium*, Mussoorie (Kar).

- [*Dimerosporium aterrimum* Cke & Wint. (181:83 ; Sacc. **XI**:259). On coriaceous leaves, Manipur (Watt). Theissen (468:194) states that the fungus is unripe and not describable, and should be deleted.]
- erysiphoides* Ell. & Ev. (Sacc. **IX**:407 ; 454:383). On leaves of *Cynodon dactylon*, Pusa (Butler) ; Bassein, Bombay (Burkill) ; of *Paspalum scrobiculatum*, Bassein, Bombay (Burkill).
- mangiferum* (Cke & Broome) Sacc. (Sacc. **I**:53 and 77 ; 132:117, figs., and 134:5, figs., as *Capnodium mangiferum* Cke & Br.). On leaves of *Mangifera indica*, Mysore.
- Diplocarpon rosae* Wolf (Sacc. **XXIV**:911 ; 5:3 ; 456:220 as *Marssonina rosae* (Lib.) Died.). On leaves of *Rosa* spp., Maymyo (Butler) ; India (Anstead). The conidial stage alone has been reported from India.
- Diplochorella indica* (Sacc.) Theiss. & Syd. (481:622 ; Sacc. **XXIV**:632 ; 403:302 as *Dothidella indica* Sacc.). On living leaves and petioles of Meliaceae (?*Turraea*), Lonavla, Bombay (Saxton).
- Dothidella trifolii* (Pers.) Bayliss-Elliott & Stansfield (Sacc. **II**:613 as *Phyllachora trifolii* (Pers.) Fekl ; 113(8):54 ; 2:27). On leaves of *Trifolium resupinatum*, Peshawar (Shaw).
- Echinosphaeria profusa* Syd. (443, **VIII**:407 ; Sacc. **XXIV**:974). On the stem of *Jasminum malabaricum*, Matheran, Bombay (Ajrekar).
- Enarthromyces indicus* Thaxt. (463:276, figs. ; Sacc. **XIV**:726). On *Pheropsophus* sp., Booloo Valley, N. W. India.
- Endodothella bambusae* (Rabenh.) Theiss. & Syd. (481:585 ; Sacc. **XXIV**:614 ; 387:45 as *Sphaeria bambusae* Rabenh. ; Sacc. **I**:446 as *Physalospora bambusae* (Rab.) Sacc. ; 454:401 as *Dothidella bambusicola* Syd. & Butler). On leaves of *Bambusa spinosa*, Royal Botanic Garden, Calcutta ; of *Bambusa* sp., Moulmein, Burma (Butler).
- dispar* Syd. (481:584 ; Sacc. **XXIV**:614 ; 454:401 as *Dothidella dispar* Syd.). On leaves of *Andropogon contortus*, Tellicherry, Malabar (Butler).
- ?*Endothia hypocreoides* (Berk. & Cke) v. Hoehn. (Ann. Myc. **VIII**:466 ; 155.81 as *Nectria hypocreoides* Berk. & Cke ; Sacc. **IX**:958). On bark, Bombay (Carter).
- Epichloe bambusae* Pat. (Sacc. **XIV**:655 ; 454:395). On culms of *Bambusa* sp., South India (Barber).
- cinerea* Berk. & Broome (Sacc. **II**:579 ; 454:394 ; 111:91, fig.). On inflorescence of *Eragrostis tenuifolia*, Hunsur and Bilikere, Mysore (Butler). Petch (Ann. Peradeniya, vii, p. 88, 1920) states that it seems probable that the Indian fungus is not identical with *E. cinerea* B. & Br. described from Ceylon.
- typhina* (Pers.) Tul. (Sacc. **II**:578). On *Stipa* sp., Harwan, Kashmir (Butler).
- Eriosphaeria calospora* Speg. (Sacc. **IX**:698). On *Bambusa* sp., Pusa (Mitra) ; Dehra Dun (Butler).

**Erysiphe acaciae** Blumer (69:182). On *Acacia catechu*, Poona (Ajrekar ; Sydow, Fungi Exotici No. 75). This species has been separated from the allied *E. polygoni* by Blumer, on account of the great size of its perithecia.

—**cichoracearum** DC. Sacc. I, under several names ; 4 ; 518 ; 111:314 and 338, figs.). On the following :—*Coccinia* (*Cephalandra*) *indica*, Cawnpore and Pusa (Butler) ; *Galium verum*, Harwan, Kashmir (Butler) ; *Mangifera indica*, inflorescence, Bombay (Wagle, 518:4) [the name *Oidium mangiferae* Berthet has been applied to a mildew on mango in Brazil] ; *Momordica balsamina*, Pusa (Butler) ; *Nicotiana tabacum*, Koilpatti, Madras (Sampson) ; Rangpur ; and elsewhere (*Oidium* only) ; *Plantago brachyphylla*, Srinagar (Butler) ; *P. major*, Harwan, Kashmir (Butler) ; *Trichosanthes dioica*, Pusa (Butler).

—**galeopsidis** DC. (Sacc. I:16). On *Phlomis stewartii*, Verinag, Kashmir (Butler).

—**graminis** Lév. (Sacc. I:19 ; 406:476 ; 111:173, figs.). On *Hordeum vulgare*, Pusa ; *Stipa sibirica*, Verinag, Kashmir ; *Triticum vulgare*, Dehra Dun (Butler) ; Lahore (B. Das) ; Peshawar (Shaw) ; Gilgit. Salmon (406) found that the form on wheat in India affected wheat and *Hordeum silvaticum*, but not barley or oats.

—**polygoni** DC. (Sacc. I:19 ; 111:253, figs. ; 113(10):81 ; 404:174). On the following :—*Berberis* sp., Achibal and Verinag, Kashmir (Butler) ; *Brassica campestris*, Chenab, Punjab (Milligan) ; *Chenopodium botrys*, Arrah, Kumaon, and Larukhpur (Butler) ; *Coriandrum sativum*, Coimbatore (Butler) ; *Eryngium billardieri*, Harwan, Kashmir (Butler) ; *Ipomoea cymosa*, Lahore (B. Das) ; *I. sp.*, Uri, Kashmir (Butler) ; *Lathyrus* sp., Ranikhet, Kumaon (Butler) ; *Lespedeza bicolor*, Harwan, Kashmir (Butler) ; *Ligusticum thomsoni*, Harwan, Kashmir (Butler) ; *Melilotus alba*, Harwan, Kashmir (Butler) ; *M. indica*, Pusa (Butler) ; *Papaver somniferum*, Jaora State, Central India (Coventry) ; *Pisum sativum*, Dehra Dun, Pusa, and Verinag, Kashmir (Butler) ; Maymyo, (Shroff) ; *Plectranthus rugosus*, Verinag, Kashmir (Butler) ; *Polygonum aviculare*, Harwan, Kashmir (Butler) ; *P. sp.*, Mussoorie (Butler) ; *Ranunculus diffusus*, Baramulla, Kashmir (Butler) ; *R. lactus*, Dubgaon and Harwan, Kashmir (Butler) ; *R. sp.*, Kumaon (Butler) ; *Rumex nepalensis* and *R. orientalis*, Harwan, Kashmir (Butler) ; *Thalictrum minus*, Harwan, Kashmir (Butler) ; *Trigonella foenum-graecum*, Pusa and Dehra Dun (Butler) ; *Vicia faba*, Dehra Dun (Butler).

**Eurotium herbariorum** (Wigg.) Link (Sacc. I:26 ; 132:117 ; 340:76 as *Aspergillus herbariorum* Wigg.). "Common on various substances. Bengal, Chittagong, Burmah" ; common as a laboratory mould, Goa (de Mello) and Pusa.

**Eutypa phaselina** (Mont.) Sacc. (Sacc. I:179 ; 196:130 as *Sphaeria phaselina* Mont.). Evergreen forests, Nakawa, Toukyeghat, Burma (Kurz).

**Eutypella vitis** (Schw.) Ell. & Ev. (Sacc. I:180 as *Eutypa* ; 454:413). On wood of *Vitis vinifera*, Poona (Chibber). Spores only  $6.9 \times 2 \mu$  instead of  $12.14 \times 2 \frac{1}{2} \mu$ .

Collections from North America contain similar small-spored forms, which Sydow and Butler suggest may perhaps constitute a var. *microspora* (454:413-14).

[*Eutypella*] *zizyphi* Syd. & Butler (454:413; Sacc. XXIV:721). On dead branches of *Zizyphus jujuba*, Pusa (Sen). An allied or perhaps identical species occurs on *Indigofera arrecta* at Pusa.

*Glomerella cingulata* (Stonem.) Spaulding & v. Schrenk (Sacc. XVII:573 and XVI:452; 507; 1:11-12; 2:53, 56; 487:703; 392:6; 393:4; 395; 205, figs.; 111:355, 448, 512, figs.). On *Capsicum* spp., Burma and Bihar (Dastur). Dastur regards the conidial forms *Gloeosporium piperatum* Ell. & Ev. and *Colletotrichum nigrum* Ell. & Hals. as belonging to this species but Higgins [Anthracnose of pepper (*Capsicum annuum* L.). Phytopathology, XVI, pp. 333-345, 1926] considers them to be as yet unattached to any perithecial form. Higgins regards the perithecial form found on *Capsicum* as *Glomerella piperata* (Stonem.) Spauld. & v. Schrenk. The brown blight and the bark disease of coffee in south India and Burma is caused by *Colletotrichum coffeanum* Noack (113:(4):62; 111:483, figs.; 392; 487:703), which is generally considered to be a conidial stage of *G. cingulata*; and the brown blight of tea in Assam, Burma, and Madras is caused by *C. camelliae* Massee, the perfect stage of which was found by Tunstall (2:56; 507:37; 503; 504) to agree with *G. cingulata*.

—*gossypii* (Southw.) Edgerton (Sacc. XXII:77; 434; 111:365, figs.). Found only in the imperfect stage, *Colletotrichum gossypii* Southw., on *Gossypium* sp., Pusa (Subramaniam).

—*lindemuthiana* (Sacc. & Mag.) Shear. See entry under *Colletotrichum lindemuthianum*.

*Hypocrea flavo-virens* Berk. in Herb. (155:100; Sacc. IX:976). On bark, Nilgiris.

—*neilgherrensis* Berk. & Cke (155:79; Sacc. IX:979). On bark, Nilgiris (E. Berkeley).

—*peltata* (Jungh.) Berk. (57, after No. 359; Sacc. I:536 as *H. peltata* (Jungh.) Sacc.). On dead bark, Darjeeling, 7,500 ft. (Hooker f.).

—*rugulosa* Berk. & Cke (155:79; Sacc. IX:973). On rotten wood, Nilgiris (E. Berkeley).

—var. *major* Cke (155:79; Sacc. IX:973). On bark of trees, Nilgiris (E. Berkeley).

—*subrufa* Berk. & Cke (155:79; Sacc. IX:972). On branches, Nilgiris (E. Berkeley).

[—*variabilis* Currey (196:139; Sacc. IX:536). On living leaves of *Bambusa* sp., Yomah, Burma (Kurz). This is a mixture of *Aschersonia badia* and *Hypocrella mollis* (375, 11:250).]

*Hypocrella discoidea* (Berk. & Broome) Sacc. (Sacc. II:580; 375, II:234, synonymy and literature; 456:216 as *Aschersonia cinnabarina* P. Henn.). On

- Aleyrodes* on *Tectona grandis*, Rangoon (Hole); on *Aleyrodes* on *Spondias mangifera*, Chittagong (Sen); on *Aleyrodes* on ?*Millettia*, Travancore (Butler).
- Hypocrella] javanica** (Penz. & Sacc.) Petch (367, II:431; 375, II:220, synonymy and literature; Sacc. XVII:820 as *Fleischeria*). On *Lecanium hemisphaericum* var. *coffae* on *Thea sinensis*, Assam; on *Lecanium* sp. on *Thea sinensis*, Kurseong and Darjeeling; on *Eriochiton theae* on *Thea sinensis*, Assam. (The records of *H. ceramichroa* (Berk. & Br.) Petch from India in 367, II:428, refer in part to *H. javanica* and in part to *H. reineckiana*; see 375, II:215, 221).
- mollis** Koorders (375, II:238, synonymy and literature; Sacc. XVI:985 as *Aschersonia confluens* P. Henn.; 456:216; 196:130 as *Hypocrea variabilis* Currey, in part). On *Aleyrodes* on *Tectona grandis*, Rangoon; on *Aleyrodes* on *Castanopsis* sp., Shan States, Burma (I. H. Burkill). See *Aschersonia badia*.
- oxystoma** (Berk.) Petch (375, II:232; 57, No. 463, as *Aschersonia oxystoma* Berk.; Sacc. III:620 as *A. oxyspora* Berk.). On [some insect on] Myrsineae, lower part of India (Hooker f. and Thomson).
- raciborskii** Zimmermann (Sacc. XVII:818; 375, II:242, synonymy and literature; 67:89 as *Aschersonia placenta* Berk.; Sacc. III:620; 456:216). On *Aleyrodes* on leaves of *Citrus medica*, Kumaon (Inayat); of *Morus indica*, Manipur.
- reineckiana** P. Henn. (Sacc. XIV:654; 375, II:209 (misprinted "reineckiana"). synonymy and literature). On *Lecanium marsupiale*, South India (Barber).
- semiamplexa** (Berk.) Sacc. (Sacc. II:581; 57, No. 483, as *Hypocrea semiamplexa* Berk.). On the spikes of *Bambusa* sp., Darjeeling (Hooker f.). Petch (375, II:266) excludes this species, which he states is apparently a *Balanis*.
- Hypocreopsis carteri** (Berk. & Cke) Sacc. (Sacc. IX:981; 155:79 as *Hypocrea carteri* Berk. & Cke; 287:1256, fig.). On bark, Bombay (Carter).
- undulata** (Berk. & Cke) Sacc. (Sacc. IX:981; 155:79 as *Hypocrea undulata* Berk. & Cke). On rotten wood, Nilgiris (E. Berkeley).
- Hypomyces chrysospermus** Tul. (Sacc. II:467; 454:394). On ?*Boletus* sp., Khasi Hills (E. M. Coventry).
- floccosus** Fr. (Sacc. II:472; 57, after No. 483, as *Hypocrea floccosa* Fr.). On *Lactarius* sp., Pomrang (Hooker f.).
- Hypoxylon atropurpureum** Fr. (Sacc. I:375; 454:415). On decorticated wood of *Tamarindus indica*, Surat (Gleadow).
- coccineum** Bulliard (Sacc. I:353; 57, after No. 483, as "*H. fragiforme* P."). On dead timber, Sone River (Hooker f.).
- fusco-purpureum** (Schw.) Berk. & Curt. (Sacc. I:378; 454:416). On dead culms of *Bambusa* sp., Bulsar, Bombay (Chibber).
- hookeri** Berk. in Herb. (151:129; Sacc. II (appendix), p. XXVI, and IX:548. On wood, India (Hooker f.).



- [*Hypoxydon*] ?*hypomiltum* Mont. (Sacc. I:354 ; 454:416 ; 376:156). On branches of *Zizyphus jujuba* and stems of *Celastrus* sp., Pusa (Butler).
- indicum* Syd. (454:416 ; Sacc. XXIV:1083). On fallen branches, Pusa (Butler).
- ? *investiens* (Schw.) Berk. (Sacc. I:383 ; 454:416). On wood, Pusa (Inayat) ; on bark of *Dalbergia sissoo*, Pusa (McRae).
- marginatum* (Schw.) Berk. (Sacc. I:371 ; 196:130 ; 376:151). On wood, Nakawa, Toukyeghat, Burma (Kurz).
- multiforme* Fr. (Sacc. I:363 ; 57, after No. 483). On *Betula* sp., Yangma Valley, E. Nepal, 11,000 ft. (Hooker f.).
- ochraceo-fulvum* Berk. & Cke (151:133 ; Sacc. II (appendix), p. XXVIII, and IX:554). On bark, Nirwab jungle, India.
- perforatum* (Schw.) Fr. (Sacc. I:375 ; 57, after No. 483 ; 376:160). On *Bambusa* sp., Nangki Mountains, 6,000 ft. (Hooker f.).
- pistillare* P. Henn. & E. Nym. (Sacc. XVI:446 ; 454:416). On bark, Barguai, Mysore (Butler).
- rubiginosum* (Pers.) Fr. (Sacc. I:376 ; 454:416). On branches, Kasauli (Butler) ; Dehra Dun (Basu) ; on culms of *Bambusa* sp., Chittagong (Sen) ; on trunks of a palm, Poona (Chibber) ; on bark of *Dalbergia sissoo*, Pusa (Dastur) ; on twigs of *Rosa* sp., Pusa (Butler).
- stygium* (Lév.) Sacc. (Sacc. I:379 ; 454:416). On bark of *Ficus glomerata*, Pusa (Butler).
- udum* (Pers.) Fr. (Sacc. I:386). Recorded by Saccardo as occurring in India ; no other reference noted.
- viduum* Berk. & Broome (Sacc. I:359 ; 454:417 ; 376:154 ; 467:159, fig.). On bark, Bombay (Blatter) ; Pusa and Royal Botanic Garden, Calcutta (Butler) ; on decorticated wood, Chittagong (Sen) ; on bark of *Tamarindus indica*, Surat (Gleadow).
- Konradia bambusina* Racib. (Sacc. XVI:606 ; 403:302). On withering branches of *Bambusa* sp., Chaumuhani, Noakhali, Bengal (Inayat).
- Kretzschmaria kurziana* (Currey) Sacc. (Sacc. IX:567 ; 196:129, fig., as *Xylaria kurziana* Currey ; 150:94 and 152:3 as *Rhopalopsis kurziana* (Curr.) Cke). On brick-laid soil upon which fires had been burnt, Royal Botanic Garden, Calcutta (Kurz). Lloyd (304:21) states that this may be the same as *K. cetrarioides* (Welw. & Curr.) Sacc. ; and also states (287:939, 1033) that it is a *Poronia* rather than a *Kretzschmaria*.
- micropus* (Fr.) Sacc. (Sacc. IX:565 ; 494:117 ; 5:4 ; 376:136 ; 505). On roots of *Thea sinensis*, Assam (Tunstall).
- Laboulbenia assamensis* Thaxt. (462, I:159 ; Sacc. XVI:683). On *Catascopus*?, Assam.
- coarctata* Thaxt. (462, I:165 ; Sacc. XVI:683). Along median depression of elytrae of *Orechtochilus*?, Bengal (Hope Coll.).

- aboulbenia*] *crassipes* Speg. (417:469, fig.; Sacc. XXIV:173). On elytrae of *Orechtochilus lucidus*, Tenasserim (L. Fea).
- dineutis* Thaxt. (462:171; Sacc. XVI:684). On *Dineutes* spp., Bengal; Nilgiris.
- euschizomeri* Speg. (417:463, fig.; Sacc. XXIV:203, under *L. brachyonychi* Thaxt.). On *Euschizomerus aeneus*, Tikelae, Burma (L. Fea).
- orechtochilli* Thaxt. (Sacc. XVI:687; 417:476, fig.). On the margin of the elytrae of *Orechtochilus typus*, Tenasserim (L. Fea).
- orechtochilicola* Speg. (417:477, fig.; Sacc. XXIV:173). On *Orechtochilus fcae*, Tenasserim (L. Fea).
- pheropsophi* Thaxt. (Sacc. XI:452; 417:504). On *Pheropsophus ?africanus*, Calcutta; on *P.* sp., Deccan.
- podontiae* Thaxt. (464:36; Sacc. XXIV:166). On elytrae of *Podontia 14-punctata*, Himalayas.
- tenuis* Thaxt. (462, I:204; Sacc. XVI:689). On ?*Cutoscopus* sp., Assam.
- lestadia buxifolia* (Cke) Sacc. (Sacc. IX:584; 154:69 as *Sphaerella buxifolia* Cke). On leaves of *Buxus sempervirens* var. *himalayensis*, Botanic Garden, Saharanpur.
- camelliae* (Cke) Berl. & Vogl. (Sacc. IX:583 as *L. "camilleae"*; 157:4 as *Sphaerella "camilleae"* Cke; 111:443, figs.; 454:406 as *L. theae* Racib.; 113 (3):52; 408:78; 2:56; 509; 503). On leaves of *Thea sinensis*, Dooars, Bengal (Hope); and elsewhere in north eastern India. Petch (368:192) considers this to be probably the same as *Glomerella cingulata*, but the two fungi as they occur in India are quite distinct.
- perusta* (Berk. & Broome) Sacc. (Sacc. I:430; 454:406). On leaves of *Dioscorea* sp., Chittagong (Sen).
- siobotrys butleri* Theiss. & Syd. (480:177; Sacc. XXIV:252; 454:384 as *L. loniceræ* Kunze). On branches and leaves of *Lonicera* sp., Harwan, Kashmir, and Bowali, Kumaon (Butler).
- elegans* (Syd.) Theiss. (475:13; Sacc. XXII:38 as *Dimerium elegans* Syd.). Stated by Theissen (475) to occur on ? *Quercus* in Sikkim and to bear *Trichothyriella quercigena* (Berk.) Theiss.
- mbosia caespitosa* (Cke) Sacc. (Sacc. II:742; 144:95 as *Ailographium caespitosum* Cke; 474:448; 316:35). On coriaceous leaves, Belgaum (Hobson).
- incisa* (Syd.) Theiss. (474:443, fig.; 454:390 as *Asterina incisa* Syd.; 473:28). On leaves of *Webera corymbosa*, Balehonnur, Mysore (Butler).
- ptosphaeria agaves* Syd. & Butler (454:409; Sacc. XXIV:979). On fading leaves of *Agave rigida* var. *sisalana*, Dauracherra, Sylhet (Butler).
- culmifraga* (Fr.) Ces. & de Not. (Sacc. II:95). On *Oryza sativa*, Noakhali (Som).
- eribotryae* Syd. & Butler (454:409; Sacc. XXIV:999). On leaves of *Eriobotrya japonica*, Saharanpur (Inayat).

- [*Leptosphaeria*] *indica* Syd. & Butler (454:409; Sacc. XXIV:987). On fading leaves and stems of *Asparagus* sp., Wynaad, Madras (McRae).
- sacchari* Breda de Haan (Sacc. XI:324; 454:409; 93, fig.; 111:382, fig.). On leaves of *Saccharum officinarum*, Dehra Dun; Bilin, Burma; Tellicherry; Coimbatore; Samalkota; Champaran; and Comilla, Bengal (Butler); Assam (Som).
- Leucoconis erysiphina* Syd. (484:456; 443, XIV:259 as *Zukalia erysiphina* Syd.; Sacc. XXIV:380; 18: 51). On leaves of *Quercus* sp., Kumaon (Butler's collector).
- Linospora populina* (Pers.) Schr. (Sacc. II:357; 57, after No. 475, as "*Phacidium ceuthocarpa* Fr.," [a new combination for *Sphaeria ceuthocarpa* Fr.] with the statement "This is no *Sphaeria*"). On leaves of *Populus ciliata*, Khabili River, 6000 ft. (Hooker f.).
- Massaria marginata* Fekl (Sacc. II:9; 454:411). On twigs of *Rosa* sp., Harwan, Kashmir (Butler).
- Massarina usambarensis* (P. Henn.) v. Hoehn. (Sacc. XIV:594 as *Holstiella*; 454:410). On the bark of *Feronia elephantum*, Chittagong (Sen); on *Citrus aurantium*, Moulmein, Burma (Butler); on *Mangifera indica*, Chittagong (Sen); on a dead stem, Noakhali (Butler).
- Melanomma citricola* Syd. and Butler (454:405; Sacc. XXIV: 1011). On the bark of *Citrus medica*, Chittagong (Sen).
- glumarum* Miyake (Sacc. XXII:244; 454:406). On culms and glumes of *Oryza sativa*, Chittagong (Sen.).
- Melanospora parasitica* Tul. (Sacc. I:464; 454:392). On *Cephalosporium lecanii* parasitic on *Lecanium* infesting *Coffea arabica*, Mysore (Lefroy).
- zamia* Corda (Sacc. I:463; 454:392). On leaves and culms of *Oryza sativa*, Noakhali (Som).
- Meliola* ? *ambigua* Pat. (Sacc. IX:424; 403:303). See entry under *Spegazzinia meliolae* in the Hyphomycetes.
- amphitricha* Fr. (Sacc. I:63; 144:96; 241:76, figs.; 454:379). On an unknown host, Belgaum (Hobson); on leaves of *Terminalia catappa*, Wynaad (McRae); on *Olea* sp. Tellicherry, Malabar (Butler); on *Zanthoxylum ovalifolium*, Talagupha, Mysore (Kulkarni). The form on *Terminalia catappa* has larger spores than the normal for the species. A *Meliola* found on *Phoenix sylvestris* and *Citrus medica* var. *acida* is attributed by Bal (28, I:3) to *M. amphitricha*.
- arundinis* Pat. (Sacc. XIV:473; 420: 109). On *Phragmites karka*, Kamrup and Puttimari, Assam (Taslim).
- asterinoides* Wint., var. *major* Gail. (Sacc. XI:262; 28, V:4; 454:379). On leaves of *Webera corymbosa*, Bilikere, Mysore (Butler); on *Plectronia (Canthium) umbellata*, Matheran, Bombay (Ajrekar); on *P. parviflora*, Bhubaneswar, Orissa (Bal).

- [*Meliola*] *bicornis* Wint. (Sacc. IX:422). On *Desmodium* sp., Bassein, Burma (Butler).
- *butleri* Syd. (454:389, figs.; Sacc. XXIV:338; 28, V:1, fig.). On leaves of *Citrus medica* var. *acida*, Chittagong (Sen); of *C. decumana*, Kya-in, Amherst District, Burma (Butler).
- *cadigensis* Yates (Sacc. XXIV:339; 28, V:2). On leaves of *Glycosmis pentaphylla*, Bengal (Bal).
- *cameliae* (Catt.) Sacc. (Sacc. I:62). On *Citrus* sp., Dehra Dun (Kar); Pusa (Butler).
- *cladotricha* Lév. (Sacc. I:63, and IX:419; 454:380). On leaves of *Eugenia jambolana*, Cottamunda, Wynaad (McRae); on coriaceous leaves of an unknown host, Kya-in, Amherst District, Burma (Butler).
- *clavulata* Wint. (Sacc. IX:426; 454:380). On leaves of *Ipomoea* sp., Tellicherry, Malabar; and Pullianur, Travancore (Butler); on leaves of *Argyrea hirsuta*, Balehonur, Mysore (Butler).
- *clerodendricola* P. Henn. (Sacc. XVI:413). On *Clerodendron infortunatum*, Chaumuhani, Noakhali Dist. (Butler).
- *crescentiae* Stevens in lit. (420:109). On *Heterophragma roxburghii*, Dharwar, Bombay (Sedgwick).
- *densa* Corda (Sacc. IX:419; 156:85). On leaves of ?*Ilex* sp., Khasi Hills.
- *diospyri* Syd. (454:381; Sacc. XXIV:384). On leaves of *Diospyros montana*, Sidrabunna, Koppa District, Mysore (Butler).
- *elmeri* Syd. (Sacc. XXIV:331; 420:109). On *Pittosporum dasycaulon*, Ghat Forests, N. Kanara (Sedgwick).
- *eugenicola* Stevens (420:107, figs.). On *Eugenia eucalyptoides*, Pachanadi, Mangalore (Subramaniam).
- *geniculata* Syd. & Butler (454:381, figs.; Sacc. XXIV:265). On leaves of *Odina wodier*, Pullianur, Travancore (Butler).
- *holigarnae* Stevens (420:108, figs.). On leaves of *Holigarna grahamii*, Aumod and Ekambi, N. Kanara (Sedgwick).
- *indica* Syd. (454:382; Sacc. XXIV:300). On leaves of *Barringtonia acutangula*, (Som).
- var. *car[e]lyae* Stevens (420:109 as var. "*caryae*") on *Careya arborea*, Gairsoppa Falls, N. Kanara (Sedgwick).
- ? *jasminicola* P. Henn. (Sacc. XI:265; 28, V:3). On *Jasminum malabaricum*, Sirsi, N. Kanara (Kulkarni); on *J. auriculatum* and *J. sambac*, Bengal (Bal); on *J.* sp., Insein, Burma (Inayat).
- *mangiferae* Earle (Sacc. XXII:48; 454:382). On leaves of *Mangifera indica*, Pullianur, Travancore (Butler); Sirsi, N. Kanara (Kulkarni); Insein, Burma (Inayat).
- *memecyli* Syd. (443, XII:198; Sacc. XXIV:314). On leaves of *Memecylon edule*, Dapoli, Bombay (Ajrekar). The species identified by Bal (28, V:4) as *M. heudeloti* Gaill. on the same host, Bhubaneshwar, Orissa, agrees well

with this species, except for some discrepancies in the description of the setae (see Stevens, 419:459).

[*Meliola*] *opiliae* Syd. (445:327; Sacc. XXIV:327). On leaves of *Opilia amentacea*, Coimbatore, Madras (Fischer).

— *palmicola* Wint. (Sacc. XI:267; 241; 454:382; 28, V:2). On leaves of *Phoenix* sp., Mudigere and Munsur, Mysore (Butler); of *P. sylvestris*, Chittagong (Sen); Burdwan (Battachariya); Godavari (Sundaraman); Calcutta (Bal); of *P. humilis*, Talagupha, Mysore (Kulkarni).

— *pterospermi* Stev. (420:108, figs.). On *Pterospermum* sp., Burma (Butler).

— *sakawensis* P. Henn. (Sacc. XVII:548; 420:109). On *Vitex leucoxylon*, N. Kanara (Sedgwick).

— *simillima* Ell. & Ev. (Sacc. XVI:414; 420:109). On *Holarrhena antidysenterica*, Dacca (Som).

— *stenospora* Wint. (Sacc. IX:423; 28, V:5; 419:281). On *Strychnos nuxvomica*, Bhubaneshwar, Orissa (Bal).

— *tamarindi* Syd. (Sacc. XXIV:308). On *Tamarindus indica*, Mangalore (Subramaniam).

— *zigzag* Berk. & Curt. (Sacc. I:67; 144:96). On an unknown host, Belgaum (Hobson). An immature specimen of what seems to be this species has been collected (454:383) on *Cinnamomum* sp., Waljain, Assam (Butler).

*Metasphaeria albescens* Thuem. (Sacc. IX:843; 105:35). On *Oryza sativa*, Burma (Butler).

— *boehmeriae* (Rabenh.) Sacc. (Sacc. II:156; 387:46 as *Sphaeria*). On stems of *Boehmeria nivea*, Royal Botanic Garden, Calcutta.

— *celastrina* Syd. & Butler (454:408; Sacc. XXIV:952). In the bark of branches of dead *Celastrus* sp., Pusa (Butler).

*Micropeltis applanata* Mont. (Sacc. II:669; 196:130). On leaves of *Gironniera*, South Andaman Island (Kurz).

*Microsphaera alni* (Wallr.) Salm. (Sacc., under several synonyms). On *Corylus colurna*, Mussoorie (Butler).

*Microthyrium annuliforme* Syd. (445:488; Sacc. XXIV:423). On leaves of *Capparis sepiaria*, Coimbatore (McRae).

— *microscopicum* Desm. (Sacc. II:662; 144:96). Host not stated, Belgaum (Hobson).

*Morenoella shoreae* Ryan (401:104). On leaves of *Shorea tubera*, Siddapur, N. Kanara (Sedgwick).

*Munkiodothis melastomata* (v. Hoehn.) Theiss. & Syd. (Sacc. XXIV:609). On *Melastoma* sp., Cherrapunji, Assam (Subramaniam).

?*Myiocopron gironnierae* Hariot & Karst. (256:129; Sacc. IX:1053). On leaves of *Gironniera* sp., Andaman Islands.

[—] *orbiculare* (Cke) Sacc. (Sacc. II:661; 140:118 as *Micropeltis orbicularis* Cke). Epiphyllous on *Symplocos spicata* Dinagapore [Dinajpur], India. According

- to v. Hoehnelt (264, No. 426), this is a lichen of the genus *Raciborskiella* (*R. orbicularis* (Cke) v. Hoehn.).]
- Myriangium cinchonae** Rehm (390:325; Sacc. XXII:580). On the bark of *Cinchona* "regia," India.
- duriaei** Mont. & Berk. (Sacc. I:198 as *Diatrype*; 454:395; 375.V:65, figs.). On the bark of fallen branches, Pusa (Butler).
- Nectria alutacea** Berk. & Cke (155:81; Sacc. IX:958). On bark, Nilgiris (E. Berkeley).
- bolbophylli** P. Henn. (Sacc. XVII:790; 454:392, with synonymy of forms; 91:25, figs.; 111:17, fig.; 105:35). On stems of *Cajanus indicus*, Dehra Dun (Butler); on *Capsicum annuum*, Dacca (Som); on the trunk of *Cocos nucifera*, Pulliyannur, Travancore (Butler); on dead culms and glumes of *Oryza sativa*, Chittagong (Sen); Burma (Inayat); on the trunk of *Piper betle*, Shiggaon, Bombay (Chibber); on bark of *P. nigrum*, Vayitri, Wynaad (Butler); Hassan, Mysore (Lamb). The Indian specimens resemble the description of the form of this species called *N. coffeicola* by Zimmermann, that on *Oryza* resembling *N. coffeicola* var. *ochroleuca* Zimm.
- cinnabarina** (Tode) Fr. (Sacc. II:479; 454:393; 492, figs.; 495; 497:37; 504:54; 522:408, figs. as "*Nectria ?ditissima*."). On branches of *Populus ciliata*, Verinag, Kashmir, and of *Prunus armeniaca*, Achibal, Kashmir (Butler); of *Pyrus communis*, Lamsdowne, United Provinces; on stems of *Thea sinensis*, Darjeeling and Cachar (Tunstall).
- collabens** Berk. & Cke (155:81; Sacc. IX:958). On bark, Bombay (Carter).
- diploa** Berk. & Curt. (Sacc. II:501; 375; I:105). The conidial stage, *Pseudomicrocera henningsii* (Koord.) Petch, on *Aspidiotus* on *Citrus aurantium*, Jorhat, Assam (Butler); on a scale insect on *Indigofera*, Bassein, Burma.
- diversispora** Petch (Sacc. XXII:456; 454:393). On fruits of *Hevea brasiliensis*, Mergui, Burma.
- eugeniae** Currey (196:130; Sacc. II:511). On dead leaves of *Eugenia* sp., Yomah, Burma (Kurz).
- heterosperma** Kalchbr. & Cke (Sacc. II:485; 454:393). On dead branches Dehra Dun (Mitra); Pusa (Butler). A variety of this species distinguished by somewhat smaller spores occurs on branches of *Citrus aurantium*, Sagaing, Burma (Butler; 454:393).
- laetifulva** (Berk. & Cke) Sacc. (Sacc. IX:961; 155:82 as *Dialonectria laetifulva* Berk. & Cke). On bark, Nilgiris (E. Berkeley).
- tjibodensis** Penzig & Sacc. (Sacc. XIV:636; 454:393). On the bark of *Guazuma tomentosa*, Pusa (Subramaniam).
- vilis** (Syd.) Petch (378:191; Sacc. XXIV:693 as *Hypocrella vilis* Syd.; 375, I:157 as *N. tuberculariae* Petch). Associated with *Asterolecanium* sp. on stem of *Bambusa*, south India.

- [*Nectria*] *xanthostigma* (Berk. & Cke) Sacc. (Sacc. IX:962; 155:82 as *Dialonectria xanthostigma* Berk. & Cke). On herbaceous stems, Nilgiris (E. Berkeley).
- Neocosmospora vasinfecta* Smith (Sacc. XVI:562; 101:6, figs.; 454:394; 111:21, fig.) On roots of *Cajanus indicus*, Pusa (Butler); on roots and cotyledons of *Cicer arietinum*, Pusa (Hafiz); Coimbatore (McRae); Bannu; on roots of *Orotalaria juncea*, Pusa and Samalkota (Butler); of *Cyamopsis psoraloides*, Pusa (Butler); of *Dolichos biflorus*, Pusa (Subramaniam); of *D. lablab*, Pusa (Butler); of *Gossypium* sp. Mirpurkhas and Nagpur; of *Indigofera arrecta* and *I. sumatrana*, Pusa (Sen); of *Saccharum officinarum*, Pusa (Subramaniam); of *Vigna catjang*, Rajshahi Farm; of *Zingiber officinale*, Rangpur (McRae).
- Nummularia cinnabarina* P. Henn. (Sacc. XIV:514). On *Dalbergia sissoo*, Pusa (Butler).
- suborbicularis* (Welw. & Curr.) Sacc. (Sacc. I:399; 196:130 as *Hypoerylon suborbiculare* Welw. & Curr.). On old logs, Royal Botanic Garden, Calcutta (Kurz).
- Oidiopsis taurica* (Lév.) Salm. (Sacc. I:16 as *Erysiphe taurica* Lév.; 111:271, fig.; 404:220; 2:28; 3:26). On *Saussurea (Aplotaxis)*, Himalaya (Jaquemont); on *Capparis* sp. (as *Erysiphe intertexta* Berk. mss. in Herb. Kew.), between Lama Yara and the Photu Pass (Thomson); on *Medicago sativa*, Madras (Sundararaman); on *Capsicum* sp., Bombay (Kulkarni); on *Cyamopsis psoraloides*, Nadiad, Bombay; on *Vinca pusilla*, Coimbatore (Butler).
- Ophiobolus butleri* Syd. (443, XIV:260; Sacc. XXIV:1062). On stems of *Capparis* sp., Pusa (Butler).
- cajani* Syd. (454:409; Sacc. XXIV:1064). On dead stems of *Cajanus indicus*, Pusa (Butler).
- manihotis* Syd. (454:410; Sacc. XXIV:1063). On petioles of *Manihot utilisima*, Pullianur, Travancore (Butler).
- oryzae* Miyake (Sacc. XXII:312). On *Oryza sativa*, Noakhali (Som).
- porphyrogonus* (Tode) Sacc. (Sacc. II:338; 454:410). On stems of *Vigna catjang*, Pullianur, Travancore (Butler).
- Palawania grandis* (Niessl) Syd. (Sacc. XXIV:424). On dead leaves of *Calamus* sp., Calcutta (Kurz). von Hoehnel remarks (264, No. 350) that this is perhaps only a strongly developed *Seynesia*.
- Paranthostomella capparidis* Syd. & Butler (454:408; Sacc. XXIV:825). On living or languishing leaves of *Capparis spinosa* var. *leucophylla*, Pusa (Inayat); on *C.* sp., Kulna, Bengal (Battachariya); Poona (Chibber); Pusa (Butler).
- Parasterina pemphidioides* (Cke) Theiss. (484:421; 133:16, fig., as *Asterina pemphidioides* Cke; Sacc. I:40; 184:76 as *A. crustosa* Berk. & Cke; 454:390; *A. hobsoni* Berk. in Herb.; 468:18, 186; 473:40, figs.; 474:426, figs.; 356:99 as *Meliola fumago* Niessl; 241:119). On leaves of *Eugenia hycnana* (erroneously given as *E. jambolana* in 454:390), Godavari (Sundararaman). On

the upper surface of leathery, red-brown leaves, India (Hobson); on leaves of *Celastrus* sp., Calcutta (Kurz).

**Parodiella paraguayensis** Speg. (Sacc. **IX**:410; **483**:130). On leaves of *Crotalaria filipes*, Koondapur, S. Kanara (McRae).

—**perisporioides** (Berk. & Curt.) Speg. (Sacc. **I**:717; **454**:383; **483**:126; **132**:117 as *Dothidea perisporioides* B. & C.). On leaves of some leguminous plant, Bombay (Hobson); on leaves of *Medicago lupulina*, Dehra Dun (Butler); of *Desmodium rufescens*, Wahjain, Assam (Butler); of *D. triflorum*, Tali-paramba, S. Kanara (McRae); of *D.* sp., Dehra Dun (Kar); Ranchi (Mitra); of *Indigofera trifoliata*, Kistna, Madras (Barber); Bassoin, Bombay (Kulkarni); of *I.* sp., Deolali (Vakil).

—**spgazzinii** Theiss. & Syd. (**483**:131; included, with preceding two species, as *P. grammodes* (Kze) Cke in **445**:327). On leaves of *Crotalaria leschenaultii*, Coimbatore (McRae). Immature, but apparently this species.

**Peroneutypella ambiens** Syd. (**454**:414; Sacc. **XXIV**:732). On fallen twigs, Dehra Dun (Butler).

—**indica** Syd. & Butler (**454**:414; Sacc. **XXIV**:730). On dead twigs of *Dalbergia sissoo*, and of an unknown host, Pusa (Butler).

—**pusilla** Syd. (**454**:414; Sacc. **XXIV**:732). On dead branches of *Citrus* sp., Sagaing, Burma (Butler).

**Phaeosaccardinula butleri** (Syd.) Theiss. & Syd. (**484**:461; Sacc. **XXIV**:386; **454**:385 as *Limacinula butleri* Syd.). On leaves of "*Artocarpus* [*? Ficus*] *mysorensis*", Vayitri, Wynaad (Butler).

—**theae** (Syd. & Butler) Theiss. & Syd. (**484**:461; Sacc. **XXIV**:386; **454**:386 as *Limacinula theae* Syd. & Butl.; **111**:461, fig.; **264**, No. 1089, as *Capnites theae* (Syd. & Butl.) v. Hoehn.). On leaves and twigs of *Thea sinensis*, Rungmook, Darjeeling (Watt).

**Phaeosphaeria oryzae** Miyake (Sacc. **XXII**:214). On *Oryza sativa*, Jorhat, Assam.

**Phragmocapnias betle** (Syd. & Butler) Theiss. & Syd. (**484**:480; Sacc. **XXIV**:385; **454**:384 as *Capnodium betle* Syd. & Butler). On leaves of *Piper betle*, Dacca (Som); Mudon, Burma (Butler).

**Phragmocaula viventis** (Cke) Theiss. & Syd. (**481**:411; **133**:16, fig., as *Dothidea viventis* Cke; Sacc. **II**:601 as *Phyllachora viventis* (Cke) Sacc.). On living leaves of Leguminosae, India (Hobson).

**Phyllachora ajrekari** Syd. (**443**, **VIII**:408; Sacc. **XXIV**:566). On leaves and petioles of *Ceropegia ?hirsuta*, Matheran, Bombay (Ajrekar).

—**aliena** Syd. (**443**, **VIII**:407; Sacc. **XXIV**:596). On leaves of *Momordica edule*, Matheran (Ajrekar).

—**ambigua** Syd. (**481**:537; Sacc. **XXIV**:600; **454**:411 as *Trabutia ambigua* Syd.). On leaves of *Eugenia jambolana*, Koppa, Mysore (Butler).

[—**annulata** (Cke) Sacc. (Sacc. **II**:610; **144**:95, as *Dothidea annulata* Cke). On leaves of an unknown tree, Belgaum (Hobson). This imperfectly described



species was re-examined by Theissen and Sydow (481:571), and it should be deleted.]

- [*Phyllachora*] *assimilis* Syd. (481:439; Sacc. XXIV:573). On leaves of *Andropogon assimilis*, Kumaon (Inayat); Dehra Dun (Butler); of *A. micranthus*, Maymyo, Burma (Butler). (See also *P. graminis*, below).
- *bambusae* Syd. & Butler (481:441; Sacc. XXIV:576; 454:400 as *Metachora bambusae* Syd. & Butler). On living leaves of *Bambusa*, Kanouth, Malabar (Butler).
- *bauhiniae* (Wint.) Theiss. & Syd. (481:491; 523:27 as *Trabutia bauhiniae* (Wint.); Sacc. IX:601). On leaves of *Bauhinia rahlia*, Royal Botanic Garden, Calcutta (Kurz); Kirkee, Bombay (Chibber). This fungus was identified doubtfully as *P. tenuis* (Berk.) Sacc. in 454:398. Theissen (480:183) stated that Kurz's collection includes both this fungus and *Pseudothia bauhiniae* (v. Hoehn.) Theiss., and Petrak & Sydow (384:305) found *Lasmeniella globulifera* also.
- *bischofia* Syd. (454:396; Sacc. XXIV:571). On leaves of *Bischofia javanica*, Panora, Wynaad (McRae).
- *catervaria* (Berk.) Sacc. (Sacc. II:598; 481:469; 454:396 as *P. topographica* Sacc.). On leaves of *Ficus hispida*, Chittagong (Sen); on *F. sp.*, Wynaad (Butler); Comilla (Inayat).
- *centothecae* Syd. (443, XIII:39; Sacc. XXIV:577). On leaves of *Centotheca lappacea*, Moulmein, Burma. (See also *P. graminis*, below).
- *chionachnes* Syd. (443, I:164; Sacc. XVII:839). On leaves of *Chionachne barbata*, Punjab (Hooker f. & Thomson).
- *coicis* P. Henn. (Sacc. XI:373; 454:399; 111:243, fig.). On leaves of *Coix lachryma-jobi*, Wynaad, Madras (Butler).
- *cynodontis* (Sacc.) Niessl (Sacc. II:602; 454:399; 445:328). On leaves of *Cynodon dactylon*; common in many parts of India.
- *cyperi* Rehm var. *donacis* Berl. & F. Sacc. (Sacc. IX:1029; 454:399). On leaves of *Arundo sp.*, Wahjain, Assam (Butler); of *Andropogon muricatus*, Pusa (Inayat); of *Imperata arundinacea*, Khasi Hills (Butler).
- *dalbergiae* Niessl (356:99; Sacc. II:594; 454:397). On leaves of *Dalbergia sp.*, Calcutta (Kurz); of *D. sissoo*, Pusa (Butler); of *D. lanceolata*, Bassein, Burma and of *D. sp.*, Bilin, Burma (Butler). The form on *D. sp.* from Burma has shorter spores (15-18 $\mu$ ) than that on *D. sissoo* (19-22 $\mu$ ), but is otherwise identical.
- *desmodii* P. Henn. (Sacc. XIV:664; 454:397). On leaves of *Desmodium sp.*, Harwan, Kashmir, and Mussoorie (Butler).
- *dolichospora* Syd. (454:396; Sacc. XXIV:598). On leaves of *Tinospora cordifolia*, Solebille, Mysore (Butler).
- *erebia* Syd. (454:396; Sacc. XXIV:590). On leaves of *Caragana sp.*, Harwan, Kashmir (Butler).

[*Phyllachora*] ?*fimbristylicola* Speg. (Sacc. XXII:423; 454:398). On leaves of *Fimbristylis* sp., Dauracherra, Sylhet, and *F. dichotoma*, Kanaighat, Sylhet (Butler). Theissen and Sydow (481:373) make this species a synonym of *P. gracillimum*.

—*graminis* (Pers.) Fekl (Sacc. II:602; 454:399-400). On leaves of the following grasses: *Andropogon serratus*, Dehra Dun (Butler); *A. triticeus*, Matheran, Bombay (Ajrekar); *A. sp.*, Koppa, Mysore (Butler); *Anthistiria* sp., Wynaad (McRae); Mussoorie (Inayat); Kumaon (Butler); *Chloris barbata*, Coimbatore (McRae); *Elionurus hirsutus*, Hoshangabad (Butler); *Oryzopsis* sp., Wynaad (McRae); Kumaon (Inayat); *Panicum patens*, Kanaighat, Sylhet (Butler, erroneously given as *Isachne* sp. in 454:399); *P. ramosum*, Wahjain, Assam (Butler); *P. colonum*, Champaran (Burkill); *P. sp.*, Panora, Wynaad (McRae) and Wahjain, Assam (Butler); *Pollinia grata*, Moulmein, Burma (Butler). The mass of forms included under this species will doubtless be subdivided into distinct varieties and species as has already been done with the following forms, which were given as *P. graminis* in 454:399-400: on *Pogonatherum saccharoideum*: *P. pogonatheri* Syd.; on *Ischaemum laxum*: *P. ischaemi* Syd.; on *Cenotheca lappaceu*: *P. cenothecae* Syd.; on *Andropogon assimilis* and *A. micranthus*: *P. assimilis* Syd.

—*indica* Theiss. & Syd. (481:488; Sacc. XXIV:589). On leaves of *Acacia penninervis*, India.

—*ischaemi* Syd. (481:449; Sacc. XXIV:580). On leaves of *Ischaemum laxum*, Bilin, Burma (Butler).

—*ixorae* Theiss. & Syd. (481:553; Sacc. XXIV:602). On leaves of *Ixora parviflora*, Coimbatore (McRae); of *I. polyantha* and *I. sp.*, Matheran, Bombay (Ajrekar); of ?*I. sp.* (Hobson). Theissen and Sydow (481:572) consider that *P. demersa* (Cda) Sacc. (185, IV:fig. 121, as *Sphaeria*; Sacc. II:595; 133:16; 445:488) should be deleted, as Corda's type does not exist, and specimens subsequently referred to *P. demersa* are in part *P. ixorae*.

—*malabarensis* Syd. & Butler (454:398; Sacc. XXIV:576). On leaves of *Bambusa* sp., Wynaad (Butler).

—*permixta* Syd. (454:397; Sacc. XXIV:605). On leaves of *Schima wallichii*, Maymyo, Burma (Butler).

—*pogonatheri* Syd. (443, XIII:40; Sacc. XXIV:584). On leaves of *Pogonatherum saccharoideum*, Kumaon (Inayat).

—*pongamiae* (Berk. & Broome) P. Henn. (Sacc. VIII:708 as *Cryptomyces pongamiae* (B. & Br.) Sacc.; 454:376, figs., 397; 445:328; 481:508; 367, III:291). On leaves of *Pongamia glabra*, Islampur, Bombay (Chibber); Madras (Butler).

—*rhytismoides* (Cda) Sacc. (Sacc. II:594; 481:506; 185, IV:42, figs., as *Dothidea rhytismoides* Cda). On leaves of *Mimosa* ("Acacia" in Sacc.), Tonasserim, Burma (Helfer).

- [*Phyllachora*] *rottboelliae* Syd. & Butler (454:400; Sacc. XXIV:585). On leaves of *Rotiboellia exaltata*, The Droog, Nilgiris (Butler).
- *sacchari* P. Henn. (Sacc. XVII:838; 445:489). On leaves of *Saccharum spontaneum*, South Malabar (McRae); on *S. sp.*, Khasi Hills (Subramaniam).
- *sacchari-spontanei* Syd. (Sacc. XXIV:586; 481:459). On leaves of *Saccharum spontaneum*, Godavari (Subramaniam); Suri, Birbhun (Basu); Pusa (Inayat); Bassein, Burma (Butler).
- *shiraiana* Syd. (Sacc. XVI:622; 454:398). A form on leaves of *Arundinaria sp.*, Wahjain, Assam (Butler).
- *sorgi* v. Hoehn. (Sacc. XXII:426). On leaves of *Sorghum vulgare* [*Andropogon sorghum*], Sabour (Dutt).
- *spissa* Syd. (454:397; Sacc. XXIV:592). On leaves of *Dalbergia sissoo*, Wynaad (McRae); of *D. sp.*, Khasi and Jaintia Hills (Subramaniam).
- *transiens* Syd. & Butler (454:397; Sacc. XXIV:605). On leaves of *Eurya acuminata*, Kumaon (Inayat).
- Phyllachorella micheliae* Syd. (445:489; Sacc. XXIV:607; 481:576). On leaves of *Michelia nilagirica*, Ootacamund (McRae).
- Phyllactinia corylea* (Pers.) Karst. (Sacc. I:5; 98:12, figs; 405:498; 113 (16):4; 113 (17):2; 392). On leaves of the following plants: *Indigofera gerardiana* and *Juglans regia*, Verinag, Kashmir (Butler); *Morus alba*, Pusa, and Dubgaon in Kashmir (Butler); *M. sp.*, Kashmir (Butler); Ootacamund (McRae); Maymyo (Rhind); *Pyrus communis*, Shillong (Som); *P. pashia*, Mussoorie (Butler).
- var. *subspiralis* Salmon (405:501; Sacc. XXII:20 as *P. suffulta* var. *subspiralis*). On leaves of *Dalbergia sissoo*, Dehra Dun and Pusa (Butler); Poona (Woodrow); Bombay (Chibber); Nagpur (Pandit).
- Physalospora calami* Syd. (454:407; Sacc. XXIV:804). On leaves of *Calamus tenuis*, Chittagong (Sen).
- *piperina* Syd. (443, XIII:38; Sacc. XXIV:1334). On stems of *Piper nigrum*, Vayitri, Wynaad (Butler).
- *rhodina* (Berk. & Curt.) Cke (Sacc. IX:592; 421:212). Specimens agreeing with the conidial stage of this fungus in morphological and cultural characters have been recorded by N. E. Stevens on *Mangifera indica* and *Albizia sp.*, Poona (Ajrekar); on tubers of *Ipomoea batatas*, Pusa (Shaw); and on various other hosts including tea, cacao, and rubber from Ceylon and the Federated Malay States. The possibility that the species generally known as *Diplodia cacaocicola* [*Botryodiplodia theobromae*, q. v.], so frequent as a parasite of *Hevea* rubber and tea in India as elsewhere, is really this fungus is suggested by Stevens (421:217), but Tunstall refers the latter fungus to *Thyridaria tarda* (q. v.).
- *transversalis* Syd. (454:407; Sacc. XXIV:804). On living leaves of *Cocos nucifera*, Bilin, Burma (Butler).

- [Physalospora] ventricosa** (Durieu & Mont.) Cke (Sacc. **XI**:292; 454:408). On dead stems of *Ricinus communis*, Pusa (Butler).
- Placostroma elettariae** (Berk. & Broome) Theiss. & Syd. (481:408; Sacc. **II**:633 as *Dothidella*). On *Elettaria cardamomum*, Bangalore (Anstead).
- Pleogibberella calamia** (Cke) Berl. & Vogl. (Sacc. **IX**:992; 159:8 as *Gibberella calamia* Cke). Surrounding fruits of *Calamus fasciculatus*, Vizagapatam, S. India.
- Pleospora spinarum** Syd. (Sacc. **XVI**:545; 454:410). On spines of *Astragalus* sp., Achibal, Kashmir (Butler). The Indian specimens have somewhat longer asci and spores than those of the type from France.
- Podocrea grossa** (Berk.) Lloyd (287:1259, fig.; 57, No. 360, as *Hypocrea grossa* Berk.; Sacc. **II**:528). On rotten wood, Darjeeling, 7-8,000 ft. (Hooker f.).
- Podonectria coccicola** (Ell. & Ev.) Peteh (375, I:161; 378:196; Sacc. **IX**:996 as *Ophionectria coccicola* (Ell. & Ev.) Berl. & Vogl.). On *Chionaspis manni* on *Thea sinensis*, Darjeeling (conidial stage only).
- Podosphaera leucotricha** (Ell. & Ev.) Salmon (Sacc. **IX**:365 as *Sphaerotheca*; 113(11):74). On *Pyrus malus*, Lahore (Mitra); Ramgarh, Kumaon (Shaw); Srinagar, Kashmir (Butler).
- Polyrhizon terminaliae** Syd. (481:234; Sacc. **XXIV**:412; 454:401 as ?*Dothidea terminaliae* Syd.). On leaves of *Terminalia catappa*, Wynad (McRae).
- Polystigma ochraceum** (Wahlenb.) Sacc. (Sacc. **II**:458; 140:117 as *P. fulvum* DC.). On leaves of *Prunus padus*, Jubal State, N. W. Himalayas, 18,000 ft. (Gamble).
- Poronia arenaria** Syd. & Butler (454:420, fig.; Sacc. **XXIV**:1094). On sand dunes near *Casuarina* trees, Chatrapur, Ganjam (Butler).
- gigantea** Sacc. (403:302; Sacc. **XXIV**:1094). On dung of elephant, Mondhomuzhi, Travancore (Ramaswami).
- oedipus** Mont. (Sacc. I:349; 133:16; 263:340; 454:420). On dung, India (Hobson); on horse dung, Pusa (Butler); Botanic Garden, Saharanpur (Gollan).
- polyporoides** P. Henn. (263:340; Sacc. **XVII**:620). On dead twigs and on the ground, Botanic Garden, Saharanpur (Gollan).
- Prillieuxina winteriana** (Pazschke) Arnaud (18:162; Sacc. **XI**:255 as *Asterina*; 401:103 as *Asterinella winteriana* (Pazsch.) Theiss.; 471:122, fig.). Epiphyllous on *Castanopsis* sp., Mangalore (Subramaniam).
- Pseudotheca bauhiniae** (v. Hehn.) Theiss. (480:183; 264, No. 774, as *Roussolla bauhiniae* v. Hehn., in part; see 481:491 and *Phyllachora bauhiniae* above). On living leaves of *Bauhinia vahlii*, Royal Botanic Garden, Calcutta (Kurz).
- Pyrenocarpon magnificum** (Syd. & Butler) Theiss. (473:31; Sacc. **XXIV**:509; 478:639, figs.; 454:391 as *Asterina magnifica* Syd. & Butler). On leaves of *Terminalia* sp., Moulmein, Burma (Butler).

- Rickia coleopterophagi* Paoli (359:286, fig.; Sacc. XXII:8). On the acarus *Coleopterophagus procerus*, India.
- Rosellinia andurnensis* Ces. & de Not. (Sacc. I:253; 454:404). On bark, Dehra Dun (Inayat).
- arcuata* Petch (Sacc. XXIV:834; 111:487, fig.; 505; 493:9 as *R. bothrina* (B. & Br.) Sacc.; 1:12; 2:57; 494:117). On roots of *Thea sinensis*, The Droog, Nilgiris (Butler); Assam (Tunstall).
- bunodes* (Berk. & Broome) Sacc. (Sacc. I:254; 454:404; 111:357, fig.; 367, II:434; 317:178). At the base of the trunks of *Litsea angustifolia*, *L. wightiana*, *Schleichera trijuga*, *Holigarna longifolia*, *Grevillea robusta*, and *Piper nigrum*, Hassan, Mysore (Lamb). Specimens of this disease on pepper were sent from Mysore to Massee in 1895 (317) by Middleton, but Massee identified them no farther than to say the fungus was allied to *Dematophora* [*Rosellinia*] *necatrix*. Petch (367, II:434) states that *R. bunodes* is recorded as parasitic on *Coffea* in southern India.
- cocoes* P. Henn. (Sacc. XXII:110; 5:4). On *Areca catechu*, India (Shaw).
- leprantha* (Fr.) Sacc. (Sacc. I:255; 240:131 as *Sphaeria leprantha* Fr.). On fallen bark, Nicobar Islands (Didrichsen).
- necatrix* (Hartig) Berl. (Sacc. XVII:595; 243:205). Recorded by Gandhi (as *Dematophora necatrix* Hartig) from Poona in 1928, on *Vitis vinifera*.
- picta* (Berk.) Cke (164:81; Sacc. IX:426). On decorticated wood, Nilgiris.
- spadicea* Ces. (Sacc. I:267; 242:438). Recorded from India, on stems of *Arundinaria spathiflora*.
- sublimbata* (Durieu & Mont.) Pass. (Sacc. I:259; 196:130 as *Sphaeria sublimbata* Dur. & Mont.). "Apparently on stems of *Thysanolaena acarifera* [*T. agrostis*], Kambala toung", Burma (Kurz).
- Sarcoxydon compunctum* (Jungb.) Cke (159:107; Sacc. I:325 as *Xylaria compuncta* (Jungb.) Berk.; 57, after No. 482; 240:130 as *Hypoxydon compunctum* Fr.). Khasi Hills (Hooker f.); Nicobar Islands, rare (240). Theissen (472:1301) considered that this fungus probably belongs to the Hypocreaceae; Petch (372:145) thinks it probable that the Ceylon specimen belongs to *S. aurantiacum* Pat.; and Lloyd (304:29, and 287:1203-4) states that the Indian record is really *S. aurantiacum*, which had better go in Moeller's genus *Entonaema* as *E. aurantiaca*.
- Schizothyrium annuliforme* Syd. & Butler (454:376; Sacc. XXIV:527). On living leaves of *Acer oblongum*, Mussoorie (Butler). It is questionable if the fungus is correctly to be considered a *Schizothyrium* (454:377).
- Sirrhodothis seriata* Syd. & Butler (481:416; Sacc. XXIV:611; 454:402 as *Scirrhia seriata* Syd. & Butler). On leaves of *Bambusa* sp., Moulmein (Butler).

- Sphaerella\*** *bambusina* Syd. & Butler (454:407; Sacc. XXIV:866). On living leaves of *Bambusa* sp., Wahjain, Assam (Butler).
- *bhauria* Cke (140:118; Sacc. I:489). On leaves of "Bhauri" (*Symplocos spicata*), Dinajpur.
- *citrullina* C. O. Smith (Sacc. XXII:123). On leaves of *Lagenaria vulgaris*, Fusa (Sen).
- *coffelicola* Cke (Sacc. I:498; 111:481, fig.). On *Coffea* sp., Wynaad (Watt).
- *fragariae* (Tul.) Sacc. (Sacc. I:505). On *Fragaria* sp., Harwan, Kashmir (Butler).
- *heveae* Petch (Sacc. XXIV:863; 344). Recorded by Mitra on *Hevea brasiliensis*, Andaman Islands.
- *malinverniana* Cattan. (Sacc. I:527; 454:407). On leaves of *Oryza sativa*, Nadia, Bengal (Mukerji); Murshidabad, Bengal (Mazumdar).
- *roseigena* Ell. & Ev. (Sacc. IX:643; 454:407). On leaves of *Rosa* sp. cult., Darjeeling (McRae).
- Sphaeria** *constellatio* Berk. (57, No. 486; Sacc. II:398). On the upper surface of green leaves, Khasi Hills (Hooker f.). Several species of "*Sphaeria*" were recorded by early workers on Indian fungi, but only this one remains in that uncertain genus.
- Sphaerostilbe** *aurantiicola* (Berk. & Broome) Petch (375: I:158; Sacc. II:487 as *Nectria*). On *Mytilaspis piperis* on *Piper nigrum*, Wynaad (Barber) (given in 375, I:127 as on *Lepidosaphes* sp. on *Piper nigrum*, South India (Barber, 1905); given in 454:393 as *Nectria coccidophthora* Zimm.; in 472:1293 as *N. subcoccinea* Sacc. & Ell.).
- *coccidophthora* (Zimm.) Petch (375, I:160, 130; Sacc. XVII:784 as *Nectria*). On *Chionaspis* on an undetermined host, India (Butler).
- *gracilipes* Tul. (Sacc. II:513; 454:394). On dead stems, Pulliyanur, Travancore; and Noakhali (Butler).
- *lateritia* Berk. & Curt. (Sacc. II:516). On stems and branches, Nepal.
- *repens* Berk. & Broome (Sacc. II:516; 113(9):67; 111:432, figs.; 1:12; 2:57; 493:13, fig.; 494:117; 394:502; 505; 386). On roots of *Thea sinensis*, Assam (Tunstall); of *Hevea brasiliensis*, Burma (Pinching; Rhind).
- Sphaerotheca** *euphorbiae* (Cast.) Salmon (Sacc. XIV:462 as *S. tomentosa* Otth.). On *Euphorbia pilosa*, Harwan, Kashmir (Butler).
- *humuli* (DC.) Burr. (Sacc. I:3-4, older names). On *Agrimonia eupatorium*, Harwan, Kashmir (Butler).
- var. *fuliginea* (Schlecht.) Salm. (Sacc. XXII:20; 111:514). On the following: *Bidens pilosa*, Poona (Ajrekar); *Lagenaria vulgaris*, Orai, United Provinces (Inayat); *Phaseolus aenitifolius*, Mandalay (Butler); *Siegesbeckia orientalis*, Verinag, Kashmir (Butler); *Taraxacum officinale* and *Cucurbita moschata*, Harwan, Kashmir (Butler).

\* *Mycosphaella* was proposed by Johanson in 1884 for this genus, because the name *Sphaerella* had been used earlier for a genus of Algae, but *Sphaerella* is still used by many mycologists.

- [*Sphaerotheca*] *pannosa* (Wallr.) Lév. (Sacc. I:3; 143:95). On *Rosa* sp. cult., Belgaum (Hobson); Srinagar, Achibal, and Harwan in Kashmir, Ranikhet and Dehra Dun (Butler); Simla (Coventry); Nagpur (Pandit); Lonavla, Bombay (Krtikar). On *Prunus amygdalus*, Harwan, Kashmir (Butler); on *P. persica*, Darjeeling (McRae); Harwan, Verinag, and Srinagar in Kashmir (Butler).
- Sphaleromyces indicus* Thaxt. (462, IV:41; Sacc. XVI:692). On *Pinophilus* sp., near "*P. rufipennis*", Malabar.
- Starbaeckiiella mangiferae* Syd. (447:37; 454:405 as *Rosellinia mangiferae* Syd.; Sacc. XXIV:826). On bark of *Mangifera indica*, Chittagong (Sen).
- Stomiopeltis aspersa* (Berk.) Theiss. (477:86; 484:432; 470:219 as *Calothyrium aspersum* (Berk.) Theiss.; 264, No. 517, as *Microthyrium aspersum* (Berk.) v. Hochh.; 57, No. 476, as *Asterina aspersa* Berk.; Sacc. I:45). On leaves of *Laurus* sp., Khasi Hills (Hooker f.).
- Tetigomyces indicus* Thaxt. (465:24; Sacc. XXIV:86). On bristles of *Gryllotalpa* sp., North India (Seudder Collection).
- Thielavia basicola* Zopf (Sacc. I:39; 454:379, conidial stage only). On roots of *Viola odorata*, Lahore. McCormick [48th Ann. Rept. Conn. Agri. Exper. Stat., pp. 539-554, 1925] states that the conidial "stage" is a distinct fungus, *Thidaviopsis basicola* (Berk.) Ferraris.
- Thyridaria tarda* Bancroft (Sacc. XXIV:770; 493:15, fig.; 494:118; 506:68). On roots of *Thea sinensis*, Doom Dooma district and Surma Valley, Assam (Tunstall). Tunstall (506) reports obtaining immature pycnidia typical of *Botryodiplodia theobromae* (q. v.) from cultures from ascospores of *T. tarda*.
- Titanella ilicina* (Syd. & Butler) Syd. (447:36; Sacc. XXIV:1047; 454:411 as *Pleomassaria ilicina* Syd. & Butler). On the bark of *Ilex* (probably *I. dipyrrena*), Ranikhet, Kumaon (Inayat).
- Trabutia butleri* Theiss. & Syd. (481:354; Sacc. XXIV:557). On leaves of *Ficus* sp., Wahjain, Assam (Som). This fungus was identified as *Phyllachora abyssinica* P. Henn. in 454:396. Petrak (383:386) has transferred *Trabutia butleri* to *Phyllachora* as *P. butleri* (Theiss. & Syd.) Petrak.
- ? *cayennensis* (DC.) Sacc. (Sacc. I:449; 57, after No. 485, as *Sphacria cayennensis* Fr.). On leaves of *Ficus roxburghii*, Sikkim (Hooker f.).
- ficum* (Niessl) Theiss. & Syd. (481:352; 356:99 as *Phyllachora ficum* Niessl (pro parte); Sacc. II:598). On leaves of *Ficus infectoria*, Royal Botanic Garden, Calcutta (Kurz). Petrak (383:386) considers that this species should remain in *Phyllachora*.
- Trichosphaeria macularis* Syd. & Butler (454:402; Sacc. XXIV:809). On living leaves of an undetermined host, Pulliyanur, Travancore (Butler).
- Trichothyliella quercigena* (Berk.) Theiss. (475:12; 468:180 as *Trichothyrium quercigenum* (Berk.) Theiss.; 159:67 as *Asterina quercigena* (Berk.) Cke (*Dothidea quercigena* Berk. in Herb.); Sacc. IX:376 as *Asterula quercigena*

(Berk.) Sacc.). On leaves of *Quercus* (?or *Pasania*), Sikkim, "auf dem Stroma von *Lasiobotrys elegans* (Syd.) Theiss." (475:13).

**Uncinula necator** (Schwein.) Burr. (89:48; 86; 1:9; 2:41; 3:33; Sacc. I:22 as *Erysiphe*). Conidial stage on *Vitis vinifera*, Srinagar, Kashmir (Butler); Nasik and Poona (Kulkarni); Deolali (Vaz); Poona (Keatinge).

— **polychaeta** (Berk. & Curt.) ex Ellis (Sacc. IX:367). On *Celtis australis* (*C. caucasica*), Harwan, Kashmir (Butler).

— **salicis** (DC.) Wint. (404:87; 140:117 as *Erysiphe martii*, in error; Sacc. I:7 as *U. adunca*). On leaves of *Populus ciliata*, Simla (Gamble); on *Salix* sp., Mussoorie (Kar).

— **tectonae** Salmon (406:479; Sacc. XXII:22). On leaves of *Tectona grandis*, Jubbulpur (Forest Officer); Dohad, Bombay (Chibber); Burma (Hole); Nagpur (Pandit); on *Cordia macledonii*, Jubbulpur (Forest Officer).

**Ustilaginoides virens** (Cke) Takahashi (Sacc. XIV:431; 262:25; 191:96, figs.; 105:30, figs.; 111:228, figs.; 452:425; 392:1; 393; 141:15 as *Ustilago virens* Cke; 319, II:167 as *Sphaecelia oryzae* Massee). In the inflorescence of *Oryza sativa*, Tinneveli (Western); Assam (Watt); Samalkota, Madras (Barber); and throughout India.

**Ustulina tessulata** (Berk.) Cke (152:3, *Hypoxyylon tessulatum* Berk. in Herb.; Sacc. IX:542). On wood, Bombay.

— **vulgaris** Tul. (Sacc. I:351; 263:339 as *U. maxima* (Hall.) Schroet.). On dead trunks, Botanic Garden, Saharanpur (Gollan).

— **zonata** (Lév.) Sacc. (Sacc. I:352; 493:11, figs.; 494:116; 393; 394:5; 505; 23; 111:348, figs.). On *Thea sinensis*, Assam (Butler); Darjeeling and elsewhere in N. E. India (Tunstall); on *Hevea brasiliensis*, Burma (Rhind); south India (Ashplant).

**Valsa ceratophora** Tul. var. *rosarum* de Not. (Sacc. I:109). On *Rosa* sp., Pusa (Butler).

— (**Euvalsa**) **corchori** Syd. & Butler (454:412; Sacc. XXIV:20). On stems of *Corchorus* sp., Poona (Chibber).

— **nepalensis** (Berk.) Sacc. (Sacc. I:125; 57, No. 487, as *Sphaeria nepalensis* Berk.). On dead twigs of *Betula* sp., East Nepal, 9,000 ft. (Hooker f.).

**Vizella conferta** (Cke) Sacc. (Sacc. II:662; 140:118 as *Micropelis conferta* Cke; 476:14; 264, No. 1007). Epiphyllous on *Symplocos spicata*, Dinagapore [Dinajpur]. Stated by Theissen (476) to belong to the Sphaeriaceae, but regarded by von Hoehnel (264) as a true subcuticular Hypodermiae, and recently discussed in detail by Petrak & Sydow (385:102).

**Winteria profusa** (Syd. & Butler) Sacc. (Sacc. XXIV:970; 454:404 as *Rehmomyces profusus* Syd. & Butler). On dead twigs of *Cajanus indicus*, Dehra Dun (Basu).

**Xylaria aemulans** Starb. (Sacc. XVII:630; 78:256; 287:1030, fig., 1069). "Very common at Barkuda [Chilka Lake] on prostrate logs" (Bose, 78).



- [*Xylaria*] *allantoidea* Berk. (Sacc. I:314; 454:417; 472:1301; 376:121; 263:340 as ?*Xylaria obtusissima* Berk.). On old wood, Wahjain, Assam (Basu); on dead trunks, Botanic Garden, Saharanpur (Gollan).
- aristata* Mont. (Sacc. I:333; 144:96). Recorded by Cooke from Belgaum (Hobson).
- aspera* Masee (Sacc. XVI:444; 454:417). On old wood, Pusa (Inayat); Godavari (Barber); on trunks, Royal Botanic Garden, Calcutta (Butler); on wood of *Dalbergia sissoo*, Pusa and Dehra Dun (Butler). Lloyd (305:14) states that this species is probably the same as *X. melisii* Berk.
- assamensis* Lloyd (287:1294, fig.). Assam (Hole).
- dealbata* Berk. & Curt. (Sacc. I:323; 467:159 as *X. dealbata* B. & Br.). On wood, Khandala, Bombay (Blatter). Lloyd (305:8) states that Theissen (466:65) is in error in referring this species to *X. obovata* Berk.
- delitschii* Auersw. (Sacc. I:336; 263:340). On the ground, apparently on rotten fruits, Botanic Garden, Saharanpur (Gollan). Theissen (472:1302) states: "It is very doubtful whether the identification of this species, which is only known from Germany, is correct."
- deserticola* Speg. (Sacc. XVIII:629; 454:417). On old roots of *Ficus* sp., Fraserpet, Coorg (Butler); on old wood on the ground, Pusa (Butler). Theissen (see 454:418) considered this species to be only a form of *X. cornu-damae* (Schw.) Berk.
- digitata* (L.) Grev. (Sacc. I:339; 196:129; 263:341; 376:119). Arnigadhi, Mussoorie (Gollan); on moist logs, Royal Botanic Garden, Calcutta (Kurz). Lloyd (288, No. 62:6) considered this name a synonym of *X. cornu-damae* (Schw.) Berk.
- emerici* Berk. in Herb. (150:86; Sacc. I, Addenda: XIX, and IX:528). ?On the ground, Nilgiris (Berkeley f.). Lloyd considers that this species, known only from the one collection, is probably the same as *X. titan* Berk.
- euglossa* Fr. (Sacc. I:324; 454:418; 472:1302; 466:59). On dead wood of *Tamarindus indica*, Surat District, Bombay (Gleadow); on wood, Royal Botanic Garden, Calcutta (Butler); as *X. turgida* Fr. from the Nicobar Islands (472).
- [—*fimbriata* Lloyd (287:726, figs., 1069). India (Bose). Lloyd stated later (287:1254) that the specimen is conidial only and should not have been named.]
- [—*furcellata* Berk. in Herb. (150:88; Sacc. I, Addenda: XXI, and IX:537), Nilgiris. Theissen (472:1301) remarks "This species cannot be maintained, because quite undeveloped", and Lloyd (287:1254, 727, fig.) also excludes it.]
- gomphus* Fr. (Sacc. I:316; 263:340). In an underground cellar, Botanic Garden, Saharanpur (Gollan). Theissen (466:63; 472:1301) follows Bresadola (Ann. Myc., V:241, 1907) in considering this species identical with *X.*

*involuta* Klotz. (see *X. tabacina* below), but Lloyd (305:15) regards it as a good species.

[*Xylaria*] *guyanensis* Mont. (Sacc. I:312; 196:129). In evergreen forests, Toukye-ghat, Burma (Kurz). Lloyd (287:650) notes that *X. neilgherries* Mss. is the same.

—*heloidea* Penzig & Sacc. (Sacc. XIV:506; 454:418). On fallen twigs, leaves, and capsules of *Calreia toona*, Dehra Dun (Butler).

—*hispidissima* (Fr.) Sacc. (Sacc. I:345; 240:129 as *Rhizomorpha hispidissima* Fr.; 304:14). Nicobar Islands (Didrichsen).

—*hypozydon* (L.) Grev. (Sacc. I:333; 196:129; 391:146; 263:340; 454:418; 57, after No. 480, and after No. 359, as "*Hypozydon vulgare* (*Sphueria hypozydon* Ehr.)". Sone River, Bihar; and on old wood, Darjeeling, 7,500 ft. (Hooker f.); on old tree stumps, Baronga Island, Arracan, Burma; and on old logs, Royal Botanic Garden, Calcutta (Kurz); on buried wood, Botanic Garden, Saharanpur (Gollan); on branches of *Casuarina*, Nicobar Islands.

—form *tropica* Syd. & Butler (454:418; Sacc. XXIV:1099). On old wood, Solebili, Balehonnur, and Barguai, Mysore (Butler); Kallor Hills, South India (Calder). Some of the earlier collections called *X. hypozydon* may also be this form.

—*nigripes* (Klotzsch) Sacc. (Sacc. IX:527; 273:203, figs., as *Sphueria* (*Cordyceps*) *nigripes* Klotzsch; 67:118 as *X. gardneri* Berk.; 144:96 as *X. escharoidea* Berk.; 57, No. 481, as *X. piperiformis* Berk.; 467:159; 263:340, as *X. peperonioides* P. Henn.; 196:129, figs., as *X. flagelliformis* Currey and *X. mutabilis* Currey; 454:419; 150:85, 89; 364:242). On the ground, India (D. Wight); Belgaum (Hobson); Botanic Garden, Saharanpur, (Gollan); on earth, Yomah, Burma (Kurz); on brick-laid paths, Royal Botanic Garden, Calcutta (Kurz); rooting in the soil, Sikkim, 5,000 ft. (Hooker f.); on wood, Bombay (Blatter); on the ground, Dehra Dun (Rao); Koppa in Mysore, and Pusa (Butler); Jullundur (Dobbs); Dhulia, Bombay (Kulkarni); and elsewhere. Three forms (a, b, and c: 454:419) are recognisable in the Pusa herbarium.

The large sclerotium of termite nests described by Berkeley & Currey as *Sclerotium stipitatum* (58:91; 197:93; 111:12, figs.), has been shown by Petch (365:401) to belong to this fungus. Bose (78:254) gives figures and a description of *X. nigripes* grown from termite nests.

—*obovata* Berk. (Sacc. I:317; 150:82, 88, as *X. carteri* Berk\* in Herb.; 406:65). On wood, Bombay (Carter).

—*pistillaris* (P. Henn. & Nyman) Theiss. (Sacc. XVI:446 as *Hypozydon pistillare* P. Henn. & E. Nym.; 472:1302; 454:416). On bark, Barguai, Mysore (Butler).

—*plebeja* Cosati (Sacc. I:318; 454:420; 472:1301; 376:124; 57, No. 482, as *X. fistuca* Berk.). East Nepal, 8,000 ft., and woods, Myriong, Khasi Hills

- (Hooker f.); on rotten wood, Pusa (Inayat); on *Areca catechu*, Sirsi, Bombay (Kulkarni).
- [*Xylaria*] *polymorpha* (Pers.) Grov. (Sacc. I:309; 196:129; 57, after No. 359, as *Hypoxyylon polymorphum* Ehr.). On old logs in the shade, rainy season, Royal Botanic Garden, Calcutta (Kurz); Sinchul, 8,000 ft. (Hooker f.).
- regalis* Cke (150:86; Sacc. I, Addenda: XIX, and IX:530). On wood, Royal Botanic Garden, Calcutta (Kurz). "Perhaps merely a form of *X. plebeia* Ces." (Theissen, 472:1301 and 466:58). Lloyd (238, No. 64:2) thought it might be the same as *X. titan* Berk.).
- salmonicolor* Berk. in Herb. (150:87; Sacc. I, Addenda: XX, and IX:529). On wood, Nilgiris.
- sanchezii* Lloyd (237:1283, fig., 1294, 1310, figs.). On the ground, India (Dr. H. Chaudhuri).
- tabacina* (Kickx) Berk. (57, after No. 482; Sacc. I:324; 196:129; 150:82; 376:119; 454:418; 305:3; 57, after No. 359, as *Hypoxyylon tabacinum* Kickx; 454:418 as *X. involuta* Kl.). On dead wood, Darjeeling, 7,500 ft., and Kali Pani, Khasi Hills (Hooker f.); on old fallen trees, Sikkim, 7-8,000 ft. (Kurz); on old wood, Dehra Dun (Butler). According to Bresadola (Ann. Myc., V:241, 1907), *X. gigantea*, *X. wrightii*, *X. involuta*, *X. portoricensis*, and *X. gomphus* are all forms of this species.
- timorensis* Lloyd (237:1056, figs., 1125). On bamboo, India (Gollan); India (D. Marudra Rajan).
- trichopoda* Penzig & Sacc. (Sacc. XVII:633; 454:420). On fallen twigs chiefly of Rosaceae, Dehra Dun (Butler); perhaps this species also on seeds of *Terminalia arjuna*, Dehra Dun (Parker).
- tricolor* Fr. (Sacc. I:342; 400:134). On trunks, near Darjeeling (Remy).
- tuberosa* (Pers.) Cke (Sacc. IX:537; 144:96 as *X. scopiformis* Mont.; 466:54; 454:420). Belgaum (Hobson); on rotten wood, Barguai, Mysore (Butler).
- vagens* Petch (Sacc. XXIV:1101; 237:1069). India (Bose).

## BASIDIOMYCETES.

## USTILAGINALES.

- Cintractia axicola* (Berk.) Cornu (Sacc. VII:480; 452:427; 455:253). In the peduncles of *Fimbristylis* spp., Yelwal, Mysore (Butler); Godavari (Mittra); Samalkota (Shaw); Nagpur (Pandit); Wynaad (McRae); Amritsar (Hafiz Khan); Bassein, Burma (Butler); of *F. complanata*, Chatrapur, Ganjam (Butler). At least three different types of spores occur in the above collections, and the species is perhaps a composite one.

- [*Cintractia*] *cryptica* Cke & Massee (171:34; Sacc. IX:285). In ovaries of *Pollinia argentea*, Munepore (C. B. Clarke). Ciferri (121:33) transfers this species doubtfully to *Ustilago* as *U. (?) cryptica* (Cke & Massee) Ciferri.
- *peribebuyensis* Speng. (Sacc. VII:458; 452:427). In the peduncles of *Cyperus* sp., Bilikere, Mysore (Butler); Mozufferpore (Butler); Cocanada (Sundararaman); Chittagong (Sen); Samalkota (Shaw); Godavari (Subramaniam); Nagpur (Pandit); Bombay (Saxton).
- *pulverulenta* Cke & Massee (171:34; Sacc. IX:285). In ovaries of *Eriunthus* sp., Nungklo, Khasi Hills (C. B. Clarke); of *Saccharum arundinaceum*, Coimbatore, Madras. Ciferri (121:33) transfers this species doubtfully to *Ustilago* as *U. (?) pulverulenta* (Cke & Massee) Ciferri.
- Doassansia alismatis* (Nees) Cornu (Sacc. VII:503; 455:255). In the leaves of *Alisma plantago*, Achibal, Kashmir (Butler).
- *martianoffiana* (Thuem.) Schroet. (Sacc. VII:504; 455:255). In the leaves of *Potamogeton* sp., Wular Lake, Kashmir (Butler).
- *nymphaeae* Syd. (443, VIII:406; Sacc. XXIII:630). In the petioles of *Nymphaea stellata*, Bassein, Bombay (Chibber).
- Entyloma eugeniarum* Cke & Massee (Sacc. XI:233). On *Eugenia tetragona*, Maymyo (Butler).
- *fumariae* Schroet. (Sacc. VII:494). On *Fumaria parviflora*, Pusa (Butler).
- *nymphaeae* (Cunningham) Setch. (407:189; 188:32, figs., as *Rhizophthora nymphaeae* Cunn.; Sacc. IX:287). In the leaves of *Nymphaea stellata* and *N. lotus* (*N. rubra*), Royal Botanic Garden, Calcutta (Cunningham); on *N.* sp., Chaunuhani and Begumganj, Noakhali District (Butler).
- *obesum* Syd. (443, VI:145; Sacc. XXIII:625). In the leaves of *Andropogon annulatus*, Nagpur (Pandit); Dehra Dun, Hoshangabad, and Dohad Farm in Bombay (Butler). Zundel (526:157) transferred this to *Tolyposporaella*.
- *oryzae* Syd. (Sacc. XXIII:625; 105:35 as *Entyloma* sp.). In the leaves of *Oryza sativa*, Lower Burma and Pusa (Butler); Bassein, Burma (Inayat); Alibag, Poona (R. K. Bhide).
- *physalidis* (Kalehbr. & Cke) Wint. (Sacc. VII:494; 452:427). In the leaves of *Physalis minima* var. *indica*, Dehra Dun (Butler).
- *ranunculi* (Bonord.) Schroet. (Sacc. VII:488). In the leaves of *Ranunculus* sp., Ranikhet, Kumaon (Butler).
- *speciosum* Schroet. & P. Henn. (Sacc. XIV:424). In the leaves of *Panicum* sp., Bangalore (Butler).
- Farysia butleri* Syd. (447:42; Sacc. XXIII:631; 452:424 as *Ustilago butleri* Syd.). In the inflorescence of *Scleria elata*, Thurya, Cherrapunji, and Syudai, Assam (Butler). The systematic position of the genus *Farysia* is uncertain (see Fischer, 233:196).
- *emodensis* (Berk.) Syd. (447:42; Sacc. XXIII:631; 57, No. 354, as *Ustilago emodensis* Berk.; 445:486; 369:223). Destroying the inflorescence

of *Polygonum* sp., Tonglo, Sikkim and Nangki, E. Nepal, 10,000 ft. (Hooker f.); on *P. chinense*, Coimbatore (C. E. C. Fischer).

**Graphiola applanata** Syd. & Butler (452:428; Sacc. **XXI**:526). In living leaves of *Phoenix sylvestris*, Dehra Gopipur, Kangra, Punjab Himalaya (Burkill); Surat (Inayat). Notes are given on this and other species of *Graphiola* by Fischer (233:188; 234:228).

— **borassi** Syd. & Butler (453:489, figs.; Sacc. **XXI**:527). On living leaves of *Borassus flabellifer*, Pusa; Godagiri, Bengal; Cocanada, Madras (Butler); Arrah (Battachariya); Suri, Birbhun (Basu); Bombay (Burkill); Bez-wada.

— **phoenicis** (Mong.) Poiteau (Sacc. **VII**:522; 133:15; 144:96; 196:130; 452:428; 194:225). In living leaves of *Phoenix paludosa*, Calcutta (Kurz); of *P. sylvestris*, Arnigadh, Mussoorie (Butler), and in very many stations in the plains; of *P. dactylifera*, Saharanpur (Gollan); Deolali (Butler); Muzaffargarh, and Hazaribagh; of *P. acutulis*, Kumaon Himalaya (Inayat).

**Melanopsichium austro-americanum** (Speg.) Beck (Sacc. **XVII**:484; 453:486, figs.; 111:21, figs.). In all parts of *Polygonum glabrum*, Pusa (Butler); Darjeeling (McRae); Lahore (G. S. Cheema).

**Mykoserinx arabica** (P. Henn.) Penzig (Sacc. **XVII**:484; 445:487). In peduncles of *Vitis quadrangularis*, Mattipalayam, Coimbatore (McRae).

**Neovossia barclayana** Bref. (82:170, figs.; Sacc. **XVI**:375, and **XIV**:422 as *Tilletia barclayana* (Bref.) Sacc. & Syd.). In ovaries of *Pennisetum orientale* (*P. triflorum*), Simla (Barclay). Sydow (451:422) has recently published notes on this fungus.

**Sorosporium contortum** Griff. (Sacc. **XVII**:485; 526:154). On *Andropogon contortus*, Makla, Amraoti District, Central Provinces (Burkill).

— **flagellatum** Syd. & Butler (453:489; Sacc. **XXI**:512). In the unopened spikes of *Ischaemum timorense* (*Spodiopogon byronis*), Wynaad (Butler); Kurseong, near Darjeeling (McRae); Koppa, Mysore (Butler).

— **furcatum** Syd. & Butler (455:254; Sacc. **XXIII**:619). In ovaries of *Ischaemum aristatum*, Lendru, Nagpur (Pandit); Insein, Burma (Butler).

— **geminellum** Syd. & Butler (455:253; Sacc. **XXIII**:618; 526:152). In the inflorescence of *Andropogon* sp., Maoryngkneng, Khasi Hills (Burkill).

— **paspali** McAlpine (Sacc. **XXI**:513; 455:253; 111:240, fig.; 113 (13):37; 113(19); 113 (21):63). In inflorescences of *Paspalum scribiculatum*, Chamta Ghat, Monghyr (Butler's collector); Pusa (Mitra; Butler).

— **pseudanthistiriae** Syd. & Butler (455:254; Sacc. **XXIII**:619). In the spikes of *Pseudanthistiria hispida*, Bassein, Bombay (Bhide).

— **reilianum** (Kuehn) McAlpine (Sacc. **VII**:471 as *Ustilago reiliana* Kuehn; 231:219; 29:275; 452:425; 455:249; 111:199, 214, figs.; 279, figs.; 363; 526:151; 132:115, fig., as *Ustilago pulveracea* Cke). On male florets of *Zea mays*, Lahore (Stewart); on male and female inflorescences of *Zea mays*,

Dohad Farm, Bombay (Gupta); Dubgaon, Kashmir (Butler); in inflorescence of *Andropogon sorghum*, Bombay (Chibber); United Provinces (Hayman); Coimbatore (Butler); Nagpur (Pandit); Jhelum, Punjab; in inflorescence of *A. halepensis*, Srinagar, Kashmir (Butler); Kolkhar, Central Provinces (Burkill).

[*Sorosporium*] *wildemanianum* P. Henn. (Sacc. **XXI**:513; 455:253; 526:146). In the inflorescence of *Andropogon* (*Cymbopogon*) *martini*, Kohana, Amraoti District, Central Provinces (Burkill).

*Sphacelotheca cruenta* (Kuehn) Potter (Sacc. **VII**:455 as *Ustilago cruenta* Kuehn; 279, figs.; 363; 111:212, fig.; 4; 526:131). In the ovaries and rachis of *Andropogon halepensis*, Botanic Gardens, Saharanpur (Hafiz Khan); Asirgarh, Central Provinces (Burkill); of *A. sorghum*, Poona, Sholapur, Dharwar, and Surat (Kulkarni); Chindwara and Seoni Districts, Central Provinces (Evans); Bombay (Burns).

—*fagopyri* Syd. & Butler (453:486; Sacc. **XXI**:508). In ovaries of *Fagopyrum esculentum*, Kulu, Himalaya (Watt).

—*hydropiperis* (Schum.) de Bary (Sacc. **VII**:499; 455:253). In ovaries of *Polygonum serrulatum*, Martand, Kashmir (Butler); of *P. glabrum*, Pusa (Butler); of *P. persicaria*, Kangra District, Punjab (Mitter); of *P. posumbu*, Dharmkot (Mitter); of *P. sp.*, Shillong (Subramaniam); Harwan, Kashmir (Butler).

—*sorghii* (Link) Clinton (Sacc. **VII**:456 as *Ustilago sorghii* (Link) Pass.; 452:425, 427; 281; 111:209, fig.; 29:275; 1:8; 2:16-18; 392:2; 393:2; 526:132; 279; 363; 82:120 as *U. tulasnei* Kuehn). In ovaries of *Andropogon sorghum* (*Sorghum vulgare*) throughout India and Burma; of *A. halepensis*, Botanic Garden, Saharanpur (Inayat).

*Stylina disticha* (Ehrenb.) Syd. (233:192, figs.; 237, **II**:434 as *Sphaeria disticha* Ehrenb.; Sacc. **VII**:523 as *Graphiola*?). Reported in the leaves of *Dracaena draco* from India. Fischer (233) states that the host is not *Dracaena*, but a palm. Subsequent collections in China were on *Livistona chinensis*. Petch (366) suggests that this fungus may be near the genus *Endocalyx*, but Fischer considers that it is near *Graphiola*.

*Tilletia caries* (DC.) Tul. (Sacc. **VII**:481 as *T. tritici* (Bjerk.) Wint.; 455:254; 111:167, fig.). In ovaries of *Triticum vulgare*, Sopor, Kashmir (Butler); Gilgit (Carrison); Simla and elsewhere in north-western India.

—*foetens* (Berk. & Curt.) Trel. (Sacc. **VII**:485 as *T. laevis* Kuehn; 455:254; 111:166). In ovaries of *Triticum vulgare*, Sopor, Kashmir (Butler); Gilgit (Carrison); and elsewhere in north-western India.

—*horrida* Takahashi (Sacc. **XIV**:422; 105, figs.; 111:227, fig.; 393:1; 395). In the grains of *Oryza sativa* throughout India and Burma (Butler, Rhind, et al.).

- [*Tilletia*] *tumefaciens* Syd. (455:255, fig.; Sacc. XXIII:621). In the leaves and culms of *Panicum antidotale*, Lyallpur (Milne).
- Tolyposporium ehrenbergii* (Kuehn) Pat. (Sacc. XXI:516 as *T. filiferum* W. Busse; 29:275; 452:427; 111:215, figs.; 279, figs.). In ovaries of *Andropogon sorghum*, Kistna, Madras (Barber); Sind (Kulkarni); Talaganj, Jhelum District, Punjab; Coimbatore and Koilpatti, Madras. Mason (Trans. Brit. Myc. Soc., XI, pp. 284-285, 1926) has reported on the nomenclature of this smut.
- penicillariae* Brefeld (82:154, figs.; Sacc. XIV:426; 453:489; 113 (14):46; 113 (15):54; 111:325, fig.). In ovaries of *Pennisetum typhoides*, Simla (Barclay); Poona and Pusa (Butler); Nadiad in Bombay, and Coimbatore (Subramaniam); Sialkot, Punjab (Cheema); Baroda. The form on cultivated bulrush millet in the plains and Deccan does not agree very closely with Brefeld's description of the form from Simla, and in particular the size of the spores is recorded by Brefeld as being larger. The original specimens collected by Barclay have not been traced.
- Urocystis coralloides* Rostrup (Sacc. VII:521; 5:5; 113 (13):38; 113 (14):48; 113 (18); 343). On roots of *Brassica campestris* var. *sarson*, Pusa (Shaw; Mitra).
- tritici* Koern. (Sacc. XXI:526; 452:427; 111:172, figs.). In the leaves of *Triticum vulgure*, Lyallpur (Butler). The form on wheat has been identified by many authors with *U. occulta* (Wallr.) Rabenh., but one will not infect the host plant of the other, and McAlpine (321:63, 199) considered it better to keep them distinct.
- Ustilago amadelpha* Syd. & Butler (455:249; Sacc. XXIII:608; 526:127). In peduncles and apices of culms of *Andropogon* sp., Mozufferpore District (Butler's collector).
- andropogonis-annulati* Bref. (82:109, figs.; Sacc. XIV:419; 452:425). In ovaries of *Andropogon annulatus*, Calcutta (Cunningham); Dehra Dun, Chatrapur, and Poona (Butler); Bassein, Bombay (Chibber); Samalkota, Madras (Barber); Punjab (Main); Nagpur. Zundel (526:132) has transferred this to *Sphacelotheca*.
- andropogonis-tuberculati* Bref. (82:109, figs.; Sacc. XIV:419). In the ovary of *Andropogon tuberculatus*, Simla (Barclay). There appears to be no record of this grass as a Himalayan species, the Calcutta herbarium having only two sheets, both from the Central Provinces. The species most likely to be confused with *A. tuberculatus* Hack. is *A. tristis*.
- aristidae-cyananthae* Bref. (82:102, figs.; Sacc. XIV:415; 452:426). In fruits of *Aristida cyanantha*, India (Cunningham); in inflorescence of *A.* sp., Siwalik Hills near Dehra Dun (Hole). Magnus (309:434) states that this fungus or a near ally received through Massee from Gamble in Dehra Dun as *U. aristidae* Peck is really a *Sorosporium*.

- [*Ustilago*] *arundinellae* Bref. (82:108, figs.; Sacc. XIV:415; 453:186). In caryopses of *Arundinella* sp., Calcutta (Cunningham); in inflorescence of *A. setosa*, Burma Gori, Kumaon (Butler).
- *avenae* (Pers.) Jensen (Sacc. IX:283; 452:424; 393:5; 111:179, figs.). In ovaries of *Avena sativa*, Dehra Dun and Pusa (Butler); Yawngghwe, Burma (Rhind); Lahore (Mittra & Das); Jagannathpur (Cave); Delhi (Burkill); Sind: Arrah; and elsewhere in India.
- *bengalensis* Syd. & Butler (455:250; Sacc. XXIII:609). In inflorescences of *Cymbopogon pendulus*, Banarhat, Duars, Bengal (Burkill).
- *burkilli* Syd. & Butler (455:248; Sacc. XXIII:607). In ovaries of *Ancilema nudiflorum*, Gauripur, Mymensingh (Burkill).
- *burmanica* Syd. & Butler (455:250; Sacc. XXIII:611). In inflorescences of *Ischaemum* sp., Kya-in, near Moulmein, Burma (Butler); of *I. spathiflorum*, Bombay (Kulkarni).
- *bursa* Berk. (57, No. 466; Sacc. VII:473; 455:250, fig.). In ovaries of *Anthistria arundinacea*, Sikkim (Hooker f.); Nunnar District, Central Provinces (Burkill); of *A.* sp., Hoshangabad and Surat (Butler); between Labada and Ghatang, Amraoti District, Central Provinces (Burkill); Bassein, Bombay (Bhide). McAlpine (321:186) united this species with *Tolyposporium anthistriae* Cobb as *T. bursa* (Berk.) McAlpine, but the Australian species is clearly different. *U. anthistriae* Petch from Ceylon has smaller spores.
- *colcis* Bref. (82:110; Sacc. XIV:412; 111:243, fig.). In ovaries of *Coix lacryma-jobi*, Simla (Barelay); Bombay (Kulkarni; Ajrekar).
- *consimilis* Syd. (450:281; 526:127; 455:249 as *U. sacchari* Rabenh.). In culms of *Saccharum fuscum*, Silsugar, Assam (Basu). Eaten by cowherds in Assam. There is an allied fungus on *S. spontaneum* at Pusa (coll. Butler) which was referred (455:249) to "*U. sacchari*", but seems to be intermediate between *U. scitaminea* and the present species. *U. consimilis* is confused by Zundel (526), who uses this name instead of *U. scitaminea* for the common smut of sugar-cane.
- *cornuti* Syd. & Butler (452:126; Sacc. XXI:561). In the unopened spikes, rarely in the flowers, of *Ophiurus corymbosus*, Surat (Butler).
- *crameri* Koernicke (Sacc. VII:455; 82:122; 455:249; 111:234, figs.; 425, figs.; 1:8). In ovaries of *Setaria italica*, Himalaya (Barelay); Manjri, near Poona (Chibber); throughout Madras (Sundararaman).
- *cynodontis* P. Henn. (Sacc. XIV:416; 82:105, figs.; 452:127; 336, figs.). In inflorescences of *Cynodon dactylon*, Simla (Barelay); Calcutta, Dehra Dun, Pusa, Mysore, Kashmir, and Bombay (Butler); Peshawar (Shaw); Lucknow, Nepal, and Semaria Ghat, Monghyr (Burkill); Madras (Subramaniam); Agra (Mittra).
- *digitariae* (Kze) Rabenh. (Sacc. VII:454; 452:426). In the spikes of *Panicum repens*, Yelwal, Mysore (Butler).



- [*Ustilago*] *duthiei* Ricker (398:111; Sacc. **XXI**:505). In inflorescences of *Andropogon bladhii*, Dehra Dun (Duthie). Zundel (526:134) has transferred this to *Sphaeclotheca*.
- *effusa* Syd. (452:425; Sacc. **XXI**:506; 526:127). In leaf-sheaths, leaves, and culms of *Andropogon muricatus*, Kanaighat, Sylhet and of *Arundinella wallichii*, Wahjain, Assam (Butler).
- *egenula* Syd. & Butler (455:251, figs.; Sacc. **XXIII**:609). In ovaries of *Eragrostis nutans*, near Pusa (Butler).
- *eleusinis* Kulkarni (280:186, figs.; 333). In ovaries of *Eleusine coracana*, Malkapur and various other parts of Bombay (Kulkarni). McRae (333) states that field experiments indicate that this smut is not seed-borne.
- *endotricha* Berk. (Sacc. **VII**:467; 57, after No. 467). In ovaries of *Carex "baccata"* [?] *baccans*] or some allied species, Khasi Hills (Hooker f. & Thomson); Tambur River, E. Nepal (Hooker f.). Berkeley notes that the spores are considerably smaller than those of the Ceylon and New Zealand specimens.
- *erythraeensis* Syd. (Sacc. **XXIII**:611; 455:251). In inflorescences of *Manisuris granularis*, Pusa and Dharwar (Butler); Nepal and Amraoti District (Burkill).
- *goeppertiana* Schroet. (Sacc. **VII**:478). On *Rumex* sp., Mussoorie (Kar). Causing hypertrophy of mid-rib and petiole; spores 12-16.5 $\mu$ .
- *hordei* (Pers.) Kellerm. & Swingle (Sacc. **IX**:283; 452:424; 111:184, figs.). In ovaries of *Hordeum vulgare*, not uncommon in northern India.
- *inayati* Syd. & Butler (453:486; Sacc. **XXI**:500). In ovaries of *Iseilema laxa*, Orai, United Provinces (Inayat); Hoshangabad, Central Provinces (Butler); Nagpur (Pandit).
- *indica* Syd. & Butler (455:250; Sacc. **XXIII**:610). In culms and panicles of *Ischnum angustifolium* (= *Pollinia eriopoda*), Pathankot, Punjab (Mitter).
- *iseilematis* Syd. & Butler (452:426; Sacc. **XXI**:500). In ovaries of *Iseilema laxa*, Samalkota, Madras (Barber); Nagpur (Butler); Godavari (Subramaniam).
- *microchloae* Syd. & Butler (452:427; Sacc. **XXI**:500). In inflorescences of *Microchloa setacea*, Bilikere, Mysore (Butler; Barber).
- *nardi* Syd. (452:425; Sacc. **XXI**:505). In ovaries of *Andropogon nardus*, Wynaad (Butler). Zundel (526:137) transferred this to *Sphaeclotheca*.
- *nuda* (Jensen) Kellerm. & Swingle (Sacc. **IX**:283). In inflorescences of *Hordeum vulgare*, Pusa (Butler).
- *ocrearum* Berk. (57, No. 468; Sacc. **VII**:458). In the ocreae of *Polygonum* sp., Nangki, East Nepal, 10,000 ft. (Hooker f.).
- *olivacea* Tul. (Sacc. **VII**:463; 319, I:115). In ovaries of *Carex condensata*, North Western Himalaya (Gamble).

- [*Ustilago*] *operta* Syd. & Butler (452:426; Sacc. **XXI**:502; 455:249). In ovaries of *Panicum villosum*, Ootacamund (Barber) and of *P. prostratum*, Tukvar, Darjeeling (Hafiz Khan).
- panici-frumentacei* Bref. (82:103, figs.; Sacc. **XIV**:414; 452:426; 111:239, fig.). In ovaries of *Panicum frumentaceum*, Himalaya (Barclay); Nambur, Kistna District (Barber); Pusa (Butler).
- panici-glauci* (Wallr.) Wint. (Sacc. **VII**:472 as *U. neglecta* Niessl; 455:249). In ovaries of *Setaria glauca*, Bellary (Barber); Amraoti District (Burkill).
- panici-miliacei* (Pers.) Wint. (Sacc. **VII**:454; 455:249; 111:236, fig.). In inflorescences of *Panicum miliaceum*, Larkipur, Kashmir (Butler). This fungus was transferred to *Sorosporium* by Takahashi.
- paradoxa* Syd. & Butler (443, **VI**:144, figs.; Sacc. **XXIII**:611; 111:239, figs.; 282). In ovaries of *Panicum frumentaceum*, Pusa (Butler); Sind (Kulkarni).
- rabenhorstiana* Kuehn (Sacc. **VII**:471; 455:249). In inflorescences of *Paspalum* (*Panicum*) *sanguinale*, Tukvar, Darjeeling (Hafiz Khan).
- rottboelliae* Syd. & Butler (453:486; Sacc. **XXI**:497). In spikes of *Rottboellia compressa*, Pusa (Butler).
- royleana* Syd. & Butler (452:426; Sacc. **XXI**:499). In spikes of *Paspalum royleanum*, Dehra Dun (Butler).
- sacchari-ciliaris* Bref. (82:109, figs.; Sacc. **XIV**:418). In ovaries of *Saccharum ciliare* (*S. sara*), Calcutta (Cunningham); in inflorescences of the same host, Mozufferpore and Cawnpore (Butler).
- schoenanthi* Syd. & Butler (452:425; Sacc. **XXI**:505). In ovaries of *Andropogon schoenanthus*, Palamcotta, Tinneveli (Barber). Zundel (526:136) has transferred this to *Sphacelotheca*.
- scitaminea* Syd. (450:281; *U. sacchari* Auct., non Rabenhorst; 452:424; 93, figs.; 111:378, figs.; 10, figs.; 206, figs.; 2:23; 392:4; 363). In culms of *Saccharum officinarum* throughout India and Burma. See also *U. consimilis*.
- shiraiana* P. Henn. (Sacc. **XVI**:369). On *Bambusa* sp., Dehra Dun (Hafiz Khan); Poona (Chibber).
- spermophora* Berk. & Curt. (Sacc. **VII**:466; 453:486). In inflorescences of *Eragrostis rhachitricha*, Pusa (Butler).
- superflua* Syd. (455:249; Sacc. **XXIII**:607). In inflorescences of *Andropogon foveolatus*, Samalkota, Madras (Shaw). Zundel (526:138) transferred this to *Sphacelotheca*.
- tenuis* Syd. (452:425; Sacc. **XXI**:506). In inflorescences of *Andropogon pertusus*, India (Wight); Hunsur, Mysore (Butler). Zundel (526:137) transferred this to *Sphacelotheca*.
- tonglinensis* Tracy & Earle (Sacc. **XIV**:420; 455:250). In inflorescences of *Ischaemum* sp., Samalkota, Madras (Shaw); Chatrapur, Ganjam (Fischer); Hoshangabad, Central Provinces (Butler).

- [*Ustilago*] *trichophora* (Link) Kunze (Sacc. VII:462; 452:426). In ovaries of *Panicum colonum*, Poona and Mysore (Butler); Nagpur (Pandit).
- *tritici* (Pers.) Jensen (Sacc. IX:283; 452:424; 111:164, figs.; 467:154; 2:19; 392:3; 363; 319; I:115 as *U. segetum* Wint.). In ovaries of *Triticum vulgare* throughout India.
- —form *foliicola* Syd. & Butler (452:424). In the leaves of *Triticum vulgare*, Cawnpore (Butler).
- *tuberculiformis* Syd. (Sacc. XVII:473; 455:248). In the leaves of *Polygonum chinense*, Darjeeling (McRae).
- *utriculosa* (Nees) Tul. (Sacc. VII:476; 453:485, figs.; 455:248). In ovaries of *Polygonum tomentosum*, Pusa (Butler); Rangoon; of *P. glabrum*, Pusa (Inayat). This fungus agrees fully with *U. koordersiana* Bref. (Sacc. XI:411) from Java, in the method of germination and characters of promycelia.
- *vittata* Berk. (57, No. 467; Sacc. VII:459). In ovaries of some Oplismenoid grass, near the summit of Parasnath, 4,000 ft., Bihar (Hooker f.); in ovaries of *Oplismenus compositus*, Vizagapatam (Gamble).
- *warneckeana* P. Henn. (Sacc. XXI:506; 445:486). In inflorescences of *Andropogon contortus*, Taliparamba, North Malabar (McRae). Zundel (526:137) transferred this to *Sphaeclothea*.
- *zeae* (Beckm.) Unger (Sacc. VII:472 as *U. maydis* (DC.) Cda; 455:249; 111:195, figs.; 113 (21):65). In inflorescences, leaves, and culms of *Zea mays*, Harwan, Kashmir (Butler); Munsong, Darjeeling (McRae).

## UREDINALES.\*

- Aecidium adhatodae* Syd. (452:440; Sacc. XXI:774; Syd. IV:93). On leaves of *Adhatoda vasica*, Dehra Dun (Butler).
- *aechmantherae* Syd. (453:504; Sacc. XXI:774; Syd. IV:93). On leaves of *Aechmanthera tomentosa*, Kumaon (Inayat); Mussoorie (Butler); of *A. gossypina* and *A. sp.*, Kumaon (Inayat).
- *ajugae* Syd. (453:504; Sacc. XXI:772; Syd. IV:110). On leaves of *Ajuga sp.*, Kumaon (Inayat).
- *amaryllidis* Syd. & Butler (455:274; Sacc. XXIII:367; Syd. IV:278). On leaves of *Amaryllis sp.*, Dehra Dun (Butler); of *Crinum asiaticum*, Coimbatore (Fischer); of *C. sp.*, Pusa (Dobbs); of *Pancratium sp.*, Poona (Vaidaya).
- *argyreiae* Berk. & Broome (Sacc. VII:814; Syd. IV:129; 452:441; 455:274). On leaves of *Argyreia speciosa*, Sylhet (Butler); of *A. cymosa*, Chatrapur in Ganjam and Samalkota (Butler); of *A. argentea*, Wahjain, Assam (Butler); of *Lettsonia elliptica*, Mysore (Butler).

\*The references to "Syd. I-IV" in this section of the list indicate Sydow's 'Monographia Uredinearum' Vols. I-IV, indexed in the Bibliography under No. 442.

- [*Aecidium*] *blepharidis* Har. & Pat. (Sacc. **XXI**:774; Syd. **IV**:94; 445:488). On leaves of *Blepharis boerhaviaefolia*, Coimbatore (McRae).
- *brasiliense* Diet. (Sacc. **XIV**:383; Syd. **IV**:120). On leaves of *Cordia rothii*, Poona (Ajrekar).
- *breyinae* Syd. (453:506; Sacc. **XXI**:780; Syd. **IV**:185). On leaves of *Breynea rhamnoides*, Pusa (Butler); Samalkota (Shaw).
- *cassiae* Bres. (Sacc. **XI**:214; Syd. **IV**:212; 453:505 as *A. torae* P. Henn). On leaves of *Cassia tora*, Mysore (Butler).
- *clerodendri* P. Henn. (Sacc. **XVI**:332; Syd. **IV**:116). On leaves of *Olerodendron* sp., India.
- *crataevae* Syd. (452:440; Sacc. **XXI**:755; Syd. **IV**:234). On leaves of *Crataeva religiosa*, Kanaighat, Sylhet (Butler).
- *crypticum* Kalkbr. & Oke (Sacc. **VII**:800; Syd. **IV**:41; 453:504). On leaves of *Gerbera lanuginosa*, Mussoorie (Butler).
- *cunninghamianum* Barclay (43:224, fig.; Sacc. **XI**:214; Syd. **IV**:224). On leaves of *Cotoneaster bacillaris*, near Simla (Barclay). Barclay (l. c.) thought that this might be a stage of *Gymnosporangium cunninghamianum*, but Sydow (l. c.) thinks it doubtful.
- *deutziae* Diet. (Sacc. **XIV**:376; Syd. **IV**:227; 453:505). On leaves of *Deutzia staminea*, Kumaon (Inayat).
- *dichrocephalae* P. Henn. (as *A. "dichrocephali"*, the host being spelled "*Dichrocephalum*"; Sacc. **XXI**:341; Syd. **IV**:35; 453:504). On leaves of *Dichrocephala latifolia*, Khasi Hills (Butler).
- *esculentum* Barclay (42:161, figs.; Sacc. **IX**:319; Syd. **IV**:209). In flowering twigs of *Acacia eburnea*, Poona (Wroughton). Prain (42) described the teratological effects on the fungus on the host.
- *flavescens* Barclay (43:226, fig.; Sacc. **XI**:218; Syd. **IV**:60). On leaves of *Senecio rufinervis*, Mashobra, near Simla (Barclay).
- *flavidum* Berk. & Broome (Sacc. **VII**:795; Syd. **IV**:81; 262:4 as *A. lasianthi* P. Henn.). Recorded on leaves of *Lasianthus* sp., North India (Warburg), but Sydow thinks that the host may be *Pavetta indica*, and the rust *A. flavidum*. (See note under *A. pavettae* below.)
- *girardiniae* Syd. (452:441; Sacc. **XXI**:782; Syd. **IV**:272). On leaves, petioles, and stems of *Girardinia heterophylla*, Mussoorie (Butler).
- *hedyotidis* Syd. (445:488; Sacc. **XXIII**:908; Syd. **IV**:77). On leaves of *Hedyotis nitida*, Chalissery, South Malabar (McRae).
- *hemidesmi* Syd. (455:272; Sacc. **XXIII**:870; Syd. **IV**:133). On leaves of *Hemidesmus indicus*, Wahjain, Assam (Som).
- *infrequens* Barclay (35, **III**:105; Sacc. **IX**:321; Syd. **IV**:206; 455:274). On leaves of *Geranium* (? *nepalense*), Simla (Barclay); of *G. nepalense*, Harwan, Kashmir (Butler).

[*Aecidium*] *innatum* Syd. & Butler (455:273; Sacc. XXIII:894; Syd. IV:191).

On leaves of *Glochidion* sp., Matheran, Bombay (Ajrekar).

—*kaernbachii* P. Henn. (Sacc. XVI:343; Syd. IV:130; 452:441; 455:273). On leaves of *Ipomoea hederacea*, Kanaighat, Sylhet (Butler); of *I. biloba*, Godavari (S. N. Mitra); of *I. aquatica*, Sylhet (Butler); of *I.* sp., Dacca (Som).

—*leiocarpum* Syd. (443, XV:143; Sacc. XXIII:898; Syd. IV:113). On leaves of *Ocimum canum*, Koilpatti, Tinneveli (McRae).

—*lepidagathis* Syd. (453:505; Sacc. XXI:773; Syd. IV:97). On leaves of *Lepidagathis hyalina*, Dehra Dun (Butler); Kumaon (Inayat); of *L.* sp., Nagpur (Pandit).

—*leucospermum* DC. (Sacc. VII:669; 35, I:361, figs.; Syd. I:532 and IV:260). On leaves of *Anemone rivularis*, Simla (Barclay); of *A.* sp., Jaunsar (Gamble).

—*luculentum* Syd. (453:506; Sacc. XXI:781; Syd. IV:269). On leaves and rarely also on branches of *Loranthus longiflorus*, Yelwal, Mysore (Butler).

—*melaleucum* Syd. (443, XV:143; Sacc. XXIII:891; Syd. IV:148; 445:327 as *A. bicolor* Sacc., which, however, differs microscopically). On leaves of *Maba buxifolia*, Tirupatti, Chittoor (McRae); of *M. buxifolia* var. *ebenus*, Tinakadu, Coimbatore (C. E. C. Fischer).

—*meliosmatis-myrianthi* P. Henn. & Shirai (Sacc. XVI:333; Syd. IV:178; 455:273). On leaves of *Meliosma simplicifolia*, Vayitri, Wynaad (McRae). The species name of this rust was originally written "*meliosmae-myrianthae*".

—*merenderae* Syd. (452:441; Sacc. XXI:784; Syd. IV:286). On leaves of *Merendera aitchisoni*, Salt Range, Punjab (Drummond).

—*microrhynchi* P. Henn. (261:154; Sacc. XVI:337; Syd. IV:48). On leaves of *Lumnaca pinnatifida* (*Microrhynchus surmentosus*), near Patna (Schlagintweit).

—*montanum* Butler (90:30, figs.; Sacc. XXI:753; Syd. IV:248). On leaves of *Berberis lycium*, Mussoorie (Butler); Kangra (Burkill); on *B. coriaria* and *B. aristata*, Jaunsar (Hole); on *B.* sp., Verinag, Kashmir (Butler).

—*mori* Barclay (43:225; Sacc. XI:221; Syd. IV:275; 452:441; 453:507; 258:392:4; *Caroma mori* Barclay in 35, III:97, fig.). On leaves of *Morus alba*, Simla (Barclay); Maymyo (Rhind); Bengal (Hector); Shillong; on *M. indica*, Koppa, Mysore (Butler); on *M. serrata*, Maymyo (Schroff); on *M.* sp., Simla (Butler); Darjeeling.

Barclay (43:225) included the common rust of *Ficus* with this species, and was followed by Sydow & Butler (452:441), but the latter (453:507) subsequently pointed out that the species on *Ficus* differed from that on *Morus* and agreed with *Uredo fici* Cast. which Butler later transferred to *Kuehneola* as *K. fici* (Cast.) Butler. (See *Cerotelium fici*, below.)

—*myriacatidis* (Barclay) Syd. (Syd. IV:50; 35, I:373, fig., as *A. compositarum* Mart. var. *myriacatidis* Barclay; Sacc. XXI:765). On leaves of

*Myriacatis nepalensis*, Mashobra, near Simla (Barclay); Harwan, Kashmir (Butler).

[*Aecidium*] *nobile* Syd. (452:440; Sacc. **XXI**:770; Syd. **IV**:76). On leaves of *Coffea arabica*, Mysore (Butler).

—*ocimi* P. Henn. (Sacc. **XI**:218; Syd. **IV**:113; 445:488). On leaves of *Ocimum canum*, Koilpatti, Madras (McRae).

—*orbiculare* Barclay (43:227, fig.; Sacc. **XI**:213; Syd. **IV**:256). On leaves, petioles, and stems of *Clematis grata*, Mattisin, near Simla (Barclay); of *C. orientalis* and *C. puberula*, India (Lace & Watt).

—*osmanthi* Syd. & Butler (453:505; Sacc. **XXI**:773; Syd. **IV**:142). On leaves of *Osmanthus fragrans*, Kumaon (Inayat).

—*paederiae* Diet. (Sacc. **XIV**:382; Syd. **IV**:81; 455:273). On leaves of *Paederia foetida*, Chittagong (Sen). *Uredo paederiae* Syd. occurs on the same leaves and is perhaps genetically connected.

—*patulum* Syd. (453:505; Sacc. **XXI**:759; Syd. **IV**:225). On leaves, petioles, and fruits of *Crataegus coccinea*, Khasi Hills (Butler).

[—*pavettae* Berk. (Sacc. **VII**:795; Syd. **IV**:82; 467:154; 455:272). On leaves of *Pavetta* sp., Matheran, Bombay (Blatter); of *P. indica*, Belgaum (Ajrekar). Sydow (455:272) suggests that *A. flavidum* Berk. & Br. may be the same fungus. Petch (367, **IV**:166) also discusses this fungus, the type specimens of which seem to be lost.]

—*peristrophes* Syd. (455:272; Sacc. **XXIII**:867; Syd. **IV**:98). On leaves of *Peristrophe* sp., Kangra, Punjab (Mitter).

—*petchii* Sacc. & Trott. (Sacc. **XXI**:758; Syd. **IV**:200; 455:273 as *A. paramignya* Petch, non Racib.). On leaves of *Paramignya monophylla*, Wynaad (McRae).

—*phyllanthi* P. Henn. (Sacc. **XVI**:345; Syd. **IV**:192; 453:505 as *A. phyllanthinum* Syd.). On leaves of *Phyllanthus reticulatus*, Kanaighat, Sylhet (Butler).

—*plectranthi* Barclay (35, **III**:104; Sacc. **IX**:321; Syd. **IV**:113; 453:504). On leaves of *Plectranthus coctsa*, Simla (Barclay); of *P. scrophularioides*, Mussoorie (Butler).

—*polygoni-cuspidati* Diet. (Sacc. **XVII**:434; Syd. **IV**:267; 452:441). On leaves of *Polygonum glabrum*, Kanaighat, Sylhet, and of *P. hydropiper*, Sylhet (Butler).

—*ponderosum* Syd. (452:440; Sacc. **XXI**:778; Syd. **IV**:139; 455:273). On branches of *Vallis heynei*, Dehra Dun (Butler); of *Cryptolepis buchanani* and of *Pergularia pallida*, Kumaon (Butler).

—*pygei* Syd. (455:272; Sacc. **XXIII**:907; Syd. **IV**:226). On leaves of *Pygeum* sp., Darjeeling (McRae).

—“*ranunculacearum* DC.” (Syd. **I**; etc.). On *Ranunculus hirtellus*, Mundali (Gamble). The identity of this *Aecidium* needs confirmation.

- [*Aecidium*] *rhytismoideum* Berk. (Sacc. VII:807; Syd. IV:145; 452:441). On leaves of *Diospyros tomentosa*, Yelwal, Mysore (Butler); South India (Barber); Tinneveli Hills (Ramaswami).
- scutellariae* Syd. (453:504; Sacc. XXI:772; Syd. IV:114). On leaves of *Scutellaria angulosa* and *S. repens*, Kumaon (Inayat).
- solani* Mont. (Syd. IV:109; 142:61). On leaves of *Solanum* sp., Sutlej Valley (Gamble). Saccardo (Syll. VII:674) includes this *Aecidium* with *Puccinia physalidis* Peck, but Arthur (20:562) treats *P. physalidis* as a short cycle rust.
- spissum* Syd. (455:273; Sacc. XXIII:910; Syd. IV:202). On leaves of *Zanthoxylum* sp., Maymyo (Butler). Sydow (l.c.) remarks that the fungus suggests a *Cacoma*, but seems to be an *Aecidium* with feebly developed peridium.
- stranvaesia* Syd. (453:505; Sacc. XXI:758; Syd. IV:226). On leaves of *Stranvaesia glaucescens*, Kumaon (Inayat).
- tweedianum* Speg. (Sacc. VII:817; Syd. IV:95; 455:272). On leaves of *Dicliptera* sp., Mussoorie (Hafiz Khan); Kasauli (Butler).
- urceolatum* Cke (142:61; Sacc. VII:775; Syd. IV:260). On leaves and stems of *Thalictrum* sp., Kanawar, 8000 ft. (Gamble). Sydow (l.c.) considers this near the aecidial stage of *Puccinia persistens* Plowr. Barclay (35, I:362, figs.) described as *A. (?) thalictri-flavi* DC. on *Thalictrum javanicum*, Simla, a species which is probably also *A. urceolatum*. He also mentions (35, I:363, figs.) an *Aecidium* on *Thalictrum minus* found at Urni (about 126 miles from Simla on the Tibet road), which he thought might be quite possibly the same, although the effect on the host was more marked, and the spores somewhat smaller.
- vangueriae* Cke (Sacc. VII:795; Syd. IV:89; 455:273). On leaves of *Vangueria* sp., Pedang, Darjeeling (Burkill).
- withaniae* Thuem. (Sacc. VII:811; Syd. IV:110; 455:270 as *A. dietelianum* P. Henn.). On leaves of *Withania coagulans*, Nitr Sutlej Valley, Punjab (Watt).
- Blastospora butleri* Syd. (455:266, figs.; Sacc. XXIII:665; Syd. III:164). On leaves of *Jasminum malabaricum*, Matheran, Bombay (Ajrekar). Ajrekar (11) states that this fungus is a *Uromyces*, but the examination of his material indicates that there are two rusts on *J. malabaricum* at Matheran, and that the form studied by him was not *B. butleri*, but possibly *Uromyces hobsoni* Vize.
- hygrophilae* Syd. & Butler (455:265; Sacc. XXIII:665; Syd. III:164, fig.). On leaves of *Hygrophila salicifolia*, Chittagong (R. Sen).
- Cerotelium alienum* (Syd. & Butler) Arth. (20:698; Syd. III:322 as *Kuchneola aliena* Syd. & Butler; Sacc. XXIII:789; 455:267 as *Chrysomyxa aliena* Syd. & Butler; 108:79; 369:248 as *Uredo spondiadis* Petch; 21:510 as

- Cerotelium spondiadis* (Petch) Arth.). On leaves of *Spondias mangifera*, Chittagong (Sen).
- [*Cerotelium*] *desmii* (Berk. & Broome) Arth. (20: 698; 111:363, fig., as *Kuehneola desmii* (B. & Br.) Butler; 21: 510 as *Cerotelium gossypii* (Lagerh.) Arth.; Syd. III:318, fig., as *Kuehneola gossypii* Arth.; 453:508 as *Uredo gossypii* Lagerh.; Sacc. XI:224). On leaves of *Gossypium* sp. cult., Pusa (Butler); Poona (Gammie); Dacca (Som); Assam (Taslim); Madras (Subramaniam).
- fici* (Cast.) Arth. (21:509; 108:76, fig., as *Kuehneola fici* (Cast.) Butler; Sacc. XXIII:790; Syd. III:323; 453:508 and 455:271 as *Uredo fici* Cast.; 133:14, figs., as *Trichobasis hobsoni* Vize; Sacc. IX:334 as *Uredo hobsoni* (Vize) Sacc.). On leaves of *Ficus* sp., India (Hobson; see Syd. IV:592, and *Marchalia ustulata* supra); of *F. glomerata*, Pusa (Butler); uredo only on leaves of *F. palmata*, *F. carica*, *F. religiosa*, and *F. sp.*, in many localities in India and Burma. (See *Accidium mori* above.)
- lanneae* (v. Hoehn.) Arth.\* (21:510; Sacc. XXIII:789 as *Kuehneola butleri* Syd.; Syd. III:322; 108:79; 455:267 as *Chrysomyxa butleri* Syd.; 224:57 as *Cerotelium butleri* (Syd.) Diet.). On leaves of *Ocimum nodosum* (syn. *Lansea grandis*), Noakhali (Butler).
- peregrina* (Syd. & Butler) Arth. (21:510; Sacc. XXIII:790 as *Kuehneola peregrina* (Syd. & Butler) Syd.; Syd. III:322; 455:267 as *Chrysomyxa peregrina* Syd. & Butler; 108:79). On leaves of *Clerodendron* sp., Wahjain, Assam (Butler).
- vitis* (Butler) Arth. (21:509; Sacc. XXIII:790 as *Kuehneola vitis* (Butl.) Syd.; Syd. III:321; 104:158, fig., as *Chrysomyxa vitis* Butl.; 108:79). On leaves of *Vitis latifolia*, Dacca (Som); Rangpur (Mitra); of *V. adnata*, Comilla (Inayat).
- Phaeospora butleri* Diet. & Syd. (220:423, fig.; Sacc. XXI:600; Syd. III:398, fig.; 452:439). On leaves of *Adhatoda vasica*, Dehra Dun and Kumaon (Butler).
- sancti-johannis* (Barclay) Diet. (220:421; Sacc. XXI:600; Syd. III:397; 452:439; 35, III:84 as *Melampsora sancti-johannis* Barclay). On leaves of *Hypericum cernuum*, Simla (Barclay); Mussoorie (Butler); Darjeeling (McRae); Jaunsar (Hole); Kumaon (Inayat); of *H. patulum*, Mussoorie (Butler; Gollan); of *H. elodeoides*, Assam (Butler); of *H. sp.*, Kumaon (Inayat).
- Chrysomyxa deformans* (Diet.). Jaczew. (269; 211:266, figs., as *Barclayella deformans* Diet.; Sacc. IX:316; Syd. III:522; 89:48; 90, fig.; 30, figs.; 35, III:104 as *Accidium thomsoni* Berk.; 137:91, in part, and 140:117, in part, as *Peridermium acicolum* Link.). On leaves of *Picea morinda* (*Abies smithiana*), Himalayas near Simla (Barclay; Gamble); Dalhousie, 7000-

\* Arthur's genus *Cerotelium* is accepted by Sydow (see 458:422) for *C. allium*, *C. fici*, and *C. gossypii* above, but it is not certain whether the remaining species mentioned are best placed in his genus or retained in *Kuehneola*.



7500 ft. (Baden Powell); Sikkim (Hooker f.); Jaunsar (Oliver); reported from Kurram Valley by Collett; on cones of the same host, Jaunsar (MacIntosh). Dietel (224:44) agrees that this rust apparently is a *Chrysomyxa*. See *Peridermium thomsoni* Berk., with which this fungus was confused by early collectors.

[*Chrysomyxa*] *dietelii* Syd. (453:502; Sacc. XXI:716; Syd. III:511). Uredo and teleuto stages on leaves of *Rhododendron arboreum*, Kumaon (Inayat). Barclay (45) described a uredo on *Rhododendron lepidotum* collected by Lace in the Himalayas north of Simla, which perhaps belongs to this or the next species; and also an *Aecidium* on *R. campanulatum*. Watt (521) also found an *Aecidium* on *R. lepidotum* which he reports Barclay considered to solve the relationship of these fungi. This suggests that it was identical with the *aecidium* on *R. campanulatum*. The occurrence of *aecidia* on *Rhododendron* in the Himalaya led Barclay to discuss the possibility of autoecism in *Chrysomyxa himalensis*, though the *aecidial* stages of *Chrysomyxa*, so far as known, all occur on *Picea*.

—*himalensis* Barclay (39:79, figs.; Sacc. IX:318; Syd. III:512; 45, figs.; 90, fig.; 452:439; 453:503). On leaves of *Rhododendron arboreum*, Simla (Barclay); Jaunsar (Hole); Kumaon (Inayat); Ranikhet and Mussoorie (Butler); of *R. campanulatum*, Jaunsar (Hole); of *R. hodgsoni*, Sikkim, alt. 11,500-12,000 ft. (Waddell). Teleuto stage only found, unless the uredo on *R. lepidotum* (see last species) should belong to this rust.

—*piceae* Barclay (35, III:94, figs.; Sacc. IX:318; Syd. III:520). On leaves of *Picea morinda* (*Abies smithiana*), Narkanda and Mashobra, near Simla (Barclay). It seems doubtful, from Barclay's description of spore germination, that this rust belongs to *Chrysomyxa*.

*Coleosporium campanulae* (Pers.) Lév. (Sacc. VII:753; Syd. III: 628; 35, III: 90, figs.; 452:439; 455:270; 253). On leaves of *Campanula colorata*, Simla (Barclay); Kurseong, near Darjeeling (McRae); Harwan, Kashmir, and Kasauli (Butler); Kumaon (Inayat); of *C. canescens*, Dehra Dun and Pusa (Butler); of *C. sylvatica*, Kumaon (Inayat); of *C. cana*, Bhim Tal, Kumaon (Inayat); of *C. sp.*, Mussoorie (Kar); of *Cephalostigma schimperii*, Wynaad (McRae).

—*clematidis* Barclay (35, III:89, figs.; Sacc. IX:317; Syd. III:653; 453:502; 57, No. 464, as *Uredo clematidis* Berk.; 130:75; 236:272, figs.; 449:56). On leaves of *Clematis nutans*, Parasnath, Bihar (Hooker f.); of *C. sp.*, Himalayas north of Dehra Dun (Flemming); Wynaad (McRae); of *C. montana*, Simla (Barclay); Harwan, Kashmir (Butler); of *C. buchaniana*, Simla (Barclay); Kumaon (Inayat); of *C. grata*, Ranikhet, Kumaon (Butler); of *C. triloba*, Kumaon (Inayat).

—*datiscæ* Tranz. (Sacc. XXI:722; Syd. III:646; 455:271). On leaves of *Datisca cannabina*, Harwan, Kashmir (Butler); Garhwal (Gamble).

- Coleosporium deeringiae* Patouill. (361:123; Sacc. IX:317). On leaves of *Bosca* (*Deeringia*) *amherstiana*, India. Sydow (III:656) points out that this is a *Cystopus*, probably *C. bliti*.]
- inulae* (Kunze) Rabenh. (Sacc. XVII:461; Syd. III:609; 455:271; 253). Uredo stage on leaves of *Inula cappa*, Shillong (Butler); Almora, Kumaon (Inayat).
- leptodermidis* (Barclay) Syd. (Syd. III:635; 455:269 as *Chnoospora leptodermidis* (Barcl.) Butler; 35, III: 86, figs., as *Melampsora leptodermidis* Barclay; Sacc. IX:297). On leaves of *Leptodermis lanceolata*, Simla (Barclay); Mussoorie and Kumaon (Butler).
- oldenlandiae* (Masse) Butler (108:79, figs.; Sacc. XXIII:860; Syd. III:636; 319, I: 116 as *Uredo oldenlandiae* Masse; 452: 440 as *Accidium oldenlandiae* (Masse) Syd.). On leaves of *Oldenlandia aspera*, Tehri Garhwal, Himalaya, 4,000 ft. (Gamble); Mysore and Pasa (Butler); Coimbatore (Fischer).
- perillae* Syd. (Sacc. XVI:317; Syd. III:641; 453:502). On leaves of *Perilla ocymoides*, Kumaon (Inayat).
- plectranthi* Barclay (35, III:89, fig.; Sacc. IX:317; Syd. III:641; 453:502). On leaves of *Plectranthus gerardianus*, Simla (Barclay); of *Ocimum* sp., Kanaighat, Assam (Butler).
- Cronartium ribicola* Fischer (Sacc. VII:598; Syd. III:567; 254, figs.; 286:272 as *Cronartium asclepiadeum* Fr. var. *ribis* Lévl.). On leaves of *Ribes* sp., Himalaya (Jacquemont); of *R. rubrum*, Punjab (Hafiz Khan). The specimen referred to by Léveillé is represented at Paris by one leaf, bearing telicuto columns which resemble those of *C. ribicola*, but a *Peridermium* on the stem of *Pinus excelsa*, the only five-needled pine in the Himalaya, was found by Colley and Taylor to be different from the *Peridermium* stage of *C. ribicola* and was named by them *P. indicum* (q.v.). It is doubtful, therefore, if this fungus on *Ribes* is really *C. ribicola*.
- Cronospora zizyphi* (Syd. & Butler) Syd. (446:243; Sacc. XXIII:854; 455:268, figs., as *Cronartium zizyphi* Syd. & Butler; Syd. III:579, fig.). On leaves of *Zizyphus rugosa*, Dacca (Som); Bombay (Ajrekar); of *Z. oenophia*, Samalkota, Madras (Butler); Dacca (Som).
- Stopsora oleae* Butler (100:448, figs.; Sacc. XXI:607; Syd. III:592, figs.; 8, figs.). On leaves of *Olea dioica*, Khandala (Chibber); near Belgaum (Ajrekar); on *O.* sp., Wynaad (McRae); Glen Coorg, South India (Watt). Sydow (IV:321) states that the Ceylon fungus *Accidium chionanthi* Berk. & Broome is the accidial stage of *C. oleae*, the host plant being *Olea* instead of *Chionanthus* as reported. Petch (367, VIII:166) has collected it on *Olea polygama* in Ceylon. Ajrekar (8) gives a full description of this stage, and Petch also gives morphological details.
- Orchidium levigatum* Syd. & Butler (453:500; Sacc. XXI:716). On leaves of *Oplismenus compositus*, Dehra Dun (Butler).

- [*Diorchidium*] *orientale* Syd. & Butler (453:500; Sacc. **XXI**:715; 455:263). On leaves of *Panicum prostratum* and *P. ramosum*, Chittagong (Sen).
- Gambleola cornuta* Massee (319, I:115; Sacc. **XVI**:314; Syd. **III**:584, fig.; 90, fig.; 452:440; 453:503). On leaves of *Berberis nepalensis*, Chakrata, 7,000 ft. (Gamble); Nilgiris (Fischer); Mussoorie and Kumaon (Butler).
- Gymnosporangium cunninghamianum* Barclay (38:78, figs.; Sacc. **IX**:314; Syd. **III**:33; 90, figs.; 452:437; 35, I:370 as *G. (?) clavariiforme* (Jacq.); 35, **III**:92). Aecidia on leaves of *Pyrus pashia*, Simla (Barclay); Dehra Dun and Mussoorie (Inayat); Dharampur (Burkill); Kumaon (Butler); of *P. variolosa*, Simla (Barclay); teleuto stage on twigs of *Cupressus torulosa*, Simla (Barclay); Jaunsar, 8,000 ft. (Kanji Lal); Mussoorie (Butler); Ranikhet.
- Hamaspora longissima* (Thuem.) Koern. (Sacc. **VII**:750; Syd. **III**:79; 314:4, fig.; 452:437). On leaves of *Rubus* sp., Wynaad (Butler); Syndai, Assam (Subramaniam).
- Haplophragmium ponderosum* Syd. & Butler (455:265, fig.; Sacc. **XXIII**:778; Syd. **III**:183; 326:110; 111:88, fig.). On twigs of *Acacia leucophloea*, Poona (Chibber); Salem and Coimbatore (McRae); Allahabad (Mitter).
- Hemileia canthii* Berk. & Broome (Sacc. **VII**:586; Syd. **III**:212; 452:438). On leaves of *Plectronia parviflora*, Yelwal, Mysore (Butler); of *P. rhcedii*, Belgaum (Ajrekar).
- holarrhenae* Syd. (443, **XII**:196; Sacc. **XXIII**:792). On leaves of *Holar-rhena antidiysenterica*, Bombay (Ajrekar); Chittagong (R. Sen); Assam (Subramaniam).
- indica* Massee (320:40, fig.; Sacc. **XXI**:598; Syd. **III**:219). On leaves of *Macropanax* sp., Belgaum (Hobson).
- vastatrix* Berk. & Broome (Sacc. **VII**:585; Syd. **III**:209; 89:47; 135, figs.; 452:438; 111:469, figs.; 487:698; 392:5; 393:4; 182:116; 320:38). On leaves of *Coffea arabica* in many places in India and Burma; of *C. liberica*, Mysore (Butler); of *C. robusta*, Mysore (Anstead); of *C.* spp., Burma (Rhind); perhaps this species on *Gardenia gummiiflora*, Sidapur, N. Kanara (Kulkarni), but see next entry.
- woodii* Kalchbr. & Cke (Sacc. **VII**:586; Syd. **III**:214). Thomas (487:699) records a rust on *Vangueria spinosa* and *Randia uliginosa*, Coorg and Mysore, which he considers morphologically identical with *H. vastatrix*, but he did not test it on coffee. *H. woodii* is recorded on species of *Vangueria*, and Pole Evans found this rust would not attack coffee (see Syd. **III**:215). *H. woodii* has been recorded on *Gardenia*, but Sydow (l.c.) refers the rust on this host to the similar *H. vastatrix*.
- Masseeëlla capparidis* (Hobson) Diet. (213:332, fig.; Sacc. **XIV**:292; Syd. **III**:548, fig.; 162:89 as *Cronartium capparidis* Hobson; 315:34, fig.). On leaves of *Capparis* sp., Belgaum (Hobson).

[*Masseella*] *fluggeae* Syd. (Ann. Myc., XXVI:424, 1928). A specimen on *Fluggea microcarpa* was sent in from Padu, Burma to the Imperial Bureau of Mycology by Rhind.

*Melampsora ciliata* Barclay (43:223, fig.; Sacc. XI:183; Syd. III:345; 455:269).

On leaves of *Populus ciliata*, Simla (Barclay); Dubgaon, Kashmir (Butler).

[—*eucalypti* Rabenh. (388:150; Sacc. VII:595). On leaves of *Eucalyptus globulus*, Royal Botanic Garden, Calcutta (Kurz). Sydow (Monog. III:393) reports that no fungus is present.]

—*euphorbiae-gerardianae* W. Mueller (Sacc. XXIII:832; Syd. III:376). Recorded on *Euphorbia* from India. Some of the collections listed under *M. helioscopiae* may possibly belong here.

—*helioscopiae* (Pers.) Wint. (Sacc. VII:586; Syd. III:377; 452:439; 455:269).

On leaves of *Euphorbia helioscopium*, Wazirabad, Punjab (Mitter); Gurdaspur (Burkill); Peshawar (Shaw); Kangra; of *E. pilosa*, Mussoorie and Kumaon (Butler); of *E. dracunculoides*, Pusa (Butler); Sabour (Dutt); Lyallpur; of *E. thyrsoidea*, Harwan, Kashmir (Butler); of *E. rothiana*, Bombay (Ajrekar); of *E. sp.*, Lahore (B. Das).

—*hypericorum* (DC.) Schroet. (Sacc. VII:591; Syd. III:384; 319: I:116; 142: 61 as *Uredo hypericorum* DC.). On leaves of *Hypericum* sp. (uredo only), Simla (Gamble); of *H. cernuum*, Jaunsar, 7,000 ft. (Gamble).

—? *larici-caprearum* Kleb. (Syd. III:353; 319, I:116 as *M. epitea* (Kze & Schm.) Thuem.; Sacc. VII:588; 453:502; 142:61 as *Leeythea epitea* Lév.; 453:502 as *M. farinosa* (Pers.) Schroet.; 140:117 as *L. salicina* Lév.; 35, III:88, figs., as *M. salicis-capreae* Wint.). On leaves of *Salix daphnoides* Simla (Gamble); of *S. elegans*, Deoban, 9,000 ft. (Gamble); Dalhousie (Baden Powell); Simla (Gamble); of *S. tetrasperma*, Ranikhet and Mussoorie (Butler); Bhowali and Bageshwar, Kumaon (Inayat); Kohat (Fletcher); of *S. sp.*, Simla (Barclay); Kashmir (Butler). There are probably two or more species of *Melampsora* on *Salix* included here, and perhaps none of them is *M. larici-caprearum*: but until the aecidial stages are worked out, they cannot be named definitely. Most of the recorded determinations have had to be based on the uredo stage only.

—*lini* (Pers.) Lév. (Sacc. VII:588; Syd. III:381; 41; 521:17; 452:439; 89:48; 326:110; 111:325, fig.; 363). On leaves and stems of *Linum usitatissimum*, Pusa (Butler); Coimbatore (McRae); Saharanpur (Inayat); Noakhali, Bengal (Som); Khwang, Assam (Watt); Kashmir (Butler); Jubbalpur.

—*ricini* (Biv.) Pers. (Syd. III:391; Sacc. VII:596 as *Melampsorella ricini* (Biv.) de Toni; 89:48; 111:330, figs.; 9:1092; 452:439; 133:15; 326:110). On leaves of *Ricinus communis*, Poona (Butler); Deccan districts, Bombay (Ajrekar); Coimbatore (McRae; Subramaniam); Nagpur (Pandit). Only the uredo stage of this fungus is known; it may perhaps be a *Melampsorella*.

- ?[*Melampsora*] *rostrupii* G. Wagner (Syd. III:343; 43:223 as *M. laecidioides* (DC.) Schroet.; Sacc. VII:590). On leaves of *Populus alba*, near Simla (Lacc). Barclay noted that no paraphyses occurred in the uredo stage, the only stage found. This rust must remain uncertain until the aecidial stage is discovered in India.
- salicis-albae* Kleb. (Syd. III:372; Sacc. XVII:266 as *M. alii-salicis-albae* Kleb.; 452:438). On leaves of *Salix alba*, Suket, Himalaya (Burkill).
- yoshinagai* P. Henn. (Sacc. XVII:264; Syd. III:391; 455:269). On leaves of *Wikstroemia canescens*, Mussoorie (Butler); Verinag, Kashmir (Butler).
- Monosporidium andrachnis* Barclay (35, I:371, figs.; Sacc. IX:297; Syd. IV:365; 455:274). On leaves of *Andrachne cordifolia*, Simla (Barclay); Kasauli (Butler); Mussoorie (Kar).
- euphorbiae* Barclay (35, I:367, figs.; Sacc. IX:297; Syd. IV:364). On leaves of *Euphorbia pilosa* (*E. cognata*), Simla (Barclay).
- Peridermium brevius* (Barclay) Sacc. (Sacc. IX:327; Syd. IV:12; 35, III:102, figs., as *Aecidium brevius* Barclay; 89:48; 90, fig.; 452:442; 140:117, pro parte, as *P. orientale* Cke; 254). On needles of *Pinus excelsa*, Simla (Barclay); Jaunsar (Oliver); Mussoorie (Butler).
- cedri* (Barclay) Sacc. (Sacc. IX:327; Syd. IV:2; 32:223, figs., as *Aecidium cedri* Barclay; 35, III:104; 90; 111:87, fig.; 452:442; 491; 254). On leaves of *Cedrus libani* var. *deodara*, near Simla (Barclay); common in the Himalayas (Troup; Hafiz Khan).
- ephedrae* Cke (137:95; Sacc. VII:835; Syd. IV:3; 89:48; 90, fig.; 452:442; 254). On young shoots and leaves of *Ephedra vulgaris*, Jaunsar (Hole).
- himalayense* Bagehee (26:19, figs.; 35, III:101, as *Aecidium complanatum* Barel. var. *corticola* Barel.; Syd. IV:12; 90: (22) as *P. complanatum* Barel. var. *corticola*; 118; 27). On branches of *Pinus longifolia*, Simla (Barclay); Garhwal (Osmaston); Naini Tal (Carr); Ranikhet (Butler); Almora (Champion); Ranikhet, Naini Tal, Pauri, Garhwal, Chakrata, and Simla (Bagehee). The *Cronartium* stage has recently been reported by Bagehee (27) on *Sweetia alata*, *S. angustifolia*, and *S. cordata*, and we find the uredo stage of this *Cronartium* on these hosts to be identical with the type of *Uredo ophelinæ* Syd. (440:21; Syd. IV:434) on *S. angustifolia*, India.
- indicum* Colley & Taylor (127:329, fig.; 254:439; 26:17). On twigs and branches of *Pinus excelsa*, Kulu (Troup). See *Cronartium ribicola*, above.
- orientale* Cke (137:91; Sacc. VII:836; Syd. IV:11; 140:117; 211:203; 489:317; 26; 35, III:101, figs., as *Aecidium complanatum* Barclay; Sacc. IX:327, as *P. complanatum* Barclay; 90, fig.; 452:442; 253; 118). On needles of *Pinus longifolia*, Simla (Barclay; Gamble; Wroughton); Mussoorie (Butler; Inayat); Kangra and Kasauli (Burkill); Almora, Dehra Dun, and elsewhere (Bagehee). Cooke included the *Peridermium* on *Pinus excelsa* needles (*Perid. brevius*, see above) with this species, but as pointed out

by Thuemen (489:317), this must have been due to error or to mixing the material. The synonymy of *P. orientale* is discussed in 26:2, footnote.

[*Peridermium*] *piceae* (Barclay) Sacc. (Sacc. IX:327; Syd. IV:4; 31:140, figs., as *Aecidium piceae* Barclay; 35, III:104; 89:48; 90, fig.; 452:442; 254). On leaves of *Picea morinda* (*Abies smithiana*), Simla (Barclay); Jaunsar (Oliver); Mussoorie (Butler); Kashmir (Gammie).

—*thomsoni* Berk. apud Cke (137:94; Sacc. VII:837; Syd. IV:4; 54:627, figs., as *Aecidium thomsoni* Berk.; 57, after No. 468; 140:117; 489:320; 30:1, figs.; 254). On leaves of *Picea morinda* (*Abies smithiana*), Mahasu, near Simla (Gamble); north-west Himalaya, 8,000 ft. (Thomson); Sikkim, 9,000 ft. (Hooker f. & Thomson); Kulu (Troup).

This is probably, in part, the rust referred by Cooke (137:91; 140:117) to "*Peridermium acicolum* Link." Barclay assumes the identity of the specimens from Simla and other north-western Himalayan regions with the species collected by Thomson in Sikkim and named *A. thomsoni* by Berkeley and he took it to be the aecidial stage of the fungus subsequently named by Dietel *Barclayella deformans* (*Chrysomyxa deformans*: q.v.). It is, however, doubtful that the two forms have any genetic connection.

*Phakopsora cronartiiformis* (Barclay) Diet. (223:385; Sacc. XXIII:844; Syd. III:412; 35, III:98 as *Uredo cronartiiformis* Barel.; 104:153 as *P. vitis* Syd.).

On leaves of *Vitis himalayana*, Simla (Barclay); Mussoorie (Butler).

—*phyllanthi* Diet. (222:469; Sacc. XXI:608; Syd. III:414; 455:269). On leaves of *Phyllanthus distichus*, Godavari (Mitra); Tanjore (Sundararaman); Dacca (Som); Palghat (Subramaniam).

—*punctiformis* (Barclay & Diet.) Diet. (213:333; Sacc. XIV:289; Syd. III:408, fig.; 211:267, fig., as *Melampsora punctiformis* Barel. & Diet.; 308:130). On leaves of *Galium aparine*, Simla (Barclay).

—*zizyphi-vulgaris* (P. Henn.) Diet. (222:469; Sacc. XXI:608; Syd. III:413; 455:269; 453:508 as *Uredo zizyphi-vulgaris* P. Henn.). On leaves of *Zizyphus juguba*, Pusa (Butler); Nagpur (Pandit); Peshawar (Shaw); Jalalpur, Punjab (Cheema); Birbhum, Bengal (Basu); of *Z. rotundifolia*, Pusa (Butler).

*Phragmidium assamense* Syd. (455:264; Sacc. XXIII:824; Syd. III:150). On leaves of *Rubus lasiocarpus*, Shillong (Som).

—*barclayi* Diet. (211:264; Sacc. IX:315; Syd. III:150, fig.; 453:501; 35, III:81, figs., as *P. ?rubi* Pers.). On leaves of *Rubus lasiocarpus*, Simla (Barclay); Kumaon (Inayat); Achibal and Harwan, Kashmir (Butler); Simla (Mitter); Mussoorie (Kar).

—*burmanicum* Syd. (455:264; Sacc. XXIII:824; Syd. III:136). On leaves of *Rubus lasiocarpus*, Maymyo (Butler). Sydow (448:167) transfers this to the new genus *Phragmotelium*.

—*butleri* Syd. (453:501; Sacc. XXI:725; Syd. III:124, fig.). On leaves of *Rosa macrophylla*, Kumaon (Inayat).

- [*Phragmidium*] *disciflorum* (Tode) James (Syd. **III**:115; Sacc. **VII**:746, pro parte, as *P. subcorticium* (Schrank) Wint.; **140**:117 as *P. mucronatum* Fr.). Reported on leaves of *Rosa* sp., Kalatop Forest, Chamba, 7,000 ft. (Baden Powell). Cooke (**142**:61) records *Coleosporium pingue* Lév. (= *P. disciflorum*) on *Astilbe*, Simla (Gamble), but the fungus could scarcely have been this species and may have been *Pucciniostele* (q.v.).
- *egenulum* Syd. & Butler (**455**:263; Sacc. **XXIII**:823; Syd. **III**:124). On leaves of *Rosa webbiana*, Verinag, Kashmir (Butler).
- *incompletum* Barclay (**35**, **III**:83; Sacc. **IX**:316; Syd. **III**:151; **453**:501). On leaves of *Rubus paniculatus*, near Simla (Barclay); Mussoorie (Butler); Kumaon (Inayat).
- *laceianum* Barclay (**43**:220, fig.; Sacc. **XI**:207; Syd. **III**:97; **217**:130). On leaves of *Potentilla argyrophylla*, Bashahr (Lace); Narkanda (Barclay); Kulu (Murray).
- *nepalense* Barclay (**43**:220, figs.; Sacc. **XI**:207; Syd. **III**:100; **217**:130). On leaves of *Potentilla nepalensis*, Mattiana, near Simla (Barclay).
- *octoloculare* Barclay (**43**:221, fig.; Sacc. **XI**:207; Syd. **III**:151). On leaves of *Rubus rosaeifolius*, near Simla (Barclay).
- *orientale* Syd. (**453**:501; Sacc. **XXI**:730; Syd. **III**:152). On leaves of *Rubus ellipticus*, Ranikhet (Butler); of *R. sp.*, Rangpur (Som).
- *potentillae* (Pers.) Karst. (Sacc. **VII**:743; Syd. **III**:97; **455**:263). On leaves of *Potentilla fragarioides*, Achibal, Kashmir (Butler). The fungus listed by Barclay (**35**, **III**:98) as "*Uredo eupatoriae* DC.", on all parts of *Potentilla* (?*kleiniana*), Simla (Barclay), probably belongs to this species. Cooke's reference (**130**:75) to "*Uredo potentillarum* DC. on leaves of *Agrimonia*" is included with *Pucciniastrum agrimoniae*.
- *quinqueloculare* Barclay (**35**, **III**:82; Sacc. **IX**:315; Syd. **III**:148). On leaves of *Rubus biflorus*, Simla (Barclay).
- *rosae-moschatae* Diet. (**217**:132, figs.; Sacc. **XXI**:725; Syd. **III**:125; **452**:437; **455**:263; **35**, **III**:79, figs., as *P. subcorticium* Schrank). On leaves of *Rosa moschata*, Simla (Barclay); Mussoorie, Murree, Kasauli, and Harwan (Butler); Peshawar (Brown); Sabathu, 4,000 ft. (Burkill); of *R. webbiana*, Harwan, Kashmir (Butler); of *R. centifolia*, Peshawar (Shaw); of *R. sp.*, Dharampur (Cheema).
- *rubi* (Pers.) Wint. (Sacc. **VII**:745, pro parte; Syd. **III**:141; **142**:61 as *Lecythea ruborum* Lév.). On leaves of *Rubus ellipticus* (*R. flavus*), Sutlej Valley, 3,000 ft. (Gamble); on leaves of *R. fruticosus*, Harwan, Kashmir (Butler).
- Puccinia absinthii* DC. (Sacc. **VII**:637; Syd. **I**:11; **455**:256). On leaves of *Artemisia* sp., Harwan, Kashmir (Butler).
- *aggregata* Syd. (**445**:326; Sacc. **XXIII**:667). On leaves of *Strobilanthes barbatus*, Attapady Valley, Coimbatore, Madras (Fischer).



- [*Puccinia*] *agrostidis* Plowr. (Sacc. **XI**:202; Syd. **I**:717; 43:226). On leaves of *Aquilegia vulgaris*, near Simla, 10,000 ft. (Lace).
- ?andropogonis* Schw. (Sacc. **VII**:664; Syd. **I**:720; 35, **II**:246, fig., as *P. andropogi* Schw.). On leaves of *Andropogon tristis*, Simla (Barclay). This rust is not otherwise recorded outside of North America, and the host is not mentioned for any *Puccinia* in Volume I of Sydow. Barclay himself had some doubt as to the name of the rust.
- anomala* Rostrup (Sacc. **XVII**:377 as *P. simplex* (Koern.) Erikss. & Henn.; Syd. **I**:756; 111:186, fig.). Rarely seen in India on *Hordeum vulgare*.
- anthistiriae* Barclay (35, **II**:246, fig.; Sacc. **IX**:304; Syd. **I**:726, fig.; 455:261). On leaves, culms, and glumes of *Anthistiria anathera*, Simla (Barclay); Harwan, Kashmir (Butler).
- apii* Desm. (Sacc. **XVII**:339; Syd. **I**:359; 43:215, fig., as *P. ?castagnei* Thuem.). On leaves and petioles of *Apium graveolens*, Simla (Barclay).
- apludae* Syd. (452:436; Sacc. **XXI**:707). On leaves of *Apluda nutica* (*A. aristata*), Dehra Dun (Butler).
- arenariae* (Schum.) Wint. (Sacc. **VII**:683; Syd. **I**:553; 43:219, fig., as *P. caudata* Barclay). On leaves of *Stellaria paniculata*, Narkanda, near Simla (Watt).
- aristidicola* P. Henn. (Sacc. **XIV**:355; Syd. **I**:728; 453:499). On leaves of *Aristida depressa*, Orai, United Provinces (Inayat).
- artemisiella* Syd. (Syd. **I**:14; Sacc. **XVII**:279; 455:256). On leaves of *Artemisia vulgaris*, Harwan, Kashmir (Butler); Mussoorie (Kar).
- arthraxonis* (P. Henn.) Syd. & Butler (453:499; Sacc. **XXI**:707; 455:261). On leaves of *Arthraxon lanceolatus*, Dehra Dun, Kumaon, and Kasauli (Butler); of *A. sp.*, Mussoorie (Kar).
- arundinellae* Barclay (35, **II**:245, fig.; Sacc. **IX**:303; Syd. **I**:732, fig.; 453:498; 455:261). On leaves of *Arundinella setosa*, Simla (Barclay); of *A. wallichii*, Simla (Barclay); Wahjain, Assam (Butler); of *A. brasiliensis*, Dehra Dun (Butler); of *A. sp.*, Maymyo (Butler); Kumaon (Inayat).
- barbeyi* (Roum.) P. Magn. (Sacc. **XVI**:305; Syd. **I**:618; 452:433). On stems of *Asphodelus fistulosus*, Lyallpur (Butler).
- belamcandae* (P. Henn.) Diet. (219:305; Sacc. **XXI**:672; 453:508 as *Uredo belamcandae* P. Henn.). On leaves of *Belamcanda punctata* (*B. chinensis*), Kumaon (Inayat). Saccardo (**XXI**:804) lists "*Uredo pulchra* Syd." on "*Gladiolus spec.*, Kumaon," etc. This mistake (the description being of *U. belamcandae*) is discussed by Sydow (**IV**:511).
- bupleuri-falcati* (DC.) Wint. (Sacc. **XVII**:393; Syd. **I**:364; 35, **III**:98 as *Uredo bupleuri* Barclay). On leaves of *Bupleurum falcatum*, Simla (Barclay); of *B. lanceolatum*, Raiengarh, Punjab (Gamble).
- burmanica* Syd. & Butler (455:261; Sacc. **XXIII**:746). On leaves of *Anthistiria imberbis* (*Themeda triandra*), Maymyo (Butler).



- [*Puccinia*] *butleri* Syd. (452:431; Sacc. **XXI**:651; 116:15; 111:90, fig.; 192:102).  
On leaves and stalks of *Launaea asplenifolia*, Bengal, Bihar, Central India, Rajputana, and United Provinces (Prain); Pusa, Cawnpore, and Burma (Butler).
- cacao* McAlp. (Sacc. **XXI**:697). On leaves of *Rottboellia compressa*, Pusa (Butler); Ranchi (Mitra).
- calospermae* Syd. & Butler (452:432; Sacc. **XXI**:670). On leaves, petioles, stems, and flowers of *Deeringia celosioidea*, Dehra Dun (Butler); Dacca (Som).
- caricis* (Schum.) Rebert. (Sacc. **VII**:626; Syd. **I**:648; 453:497; **35**, **II**:244; 34:29, figs., as *Aecidium urticae* Schum. var. *himalayense* Barclay and *P. urticae* Barclay; **35**, **I**:368). Aecidia on leaves and stems of *Urtica parviflora*, Simla (Barclay); Kumaon and Mussoorie (Butler); teleuto stage on *Carex setigera*, Simla (Barclay).
- caricis-asteris* Arth. (Sacc. **XVII**:371; Syd. **I**:665). On *Aster asperulus*, Mussoorie (Gamble).
- caricis-filicinae* Barclay (**35**, **II**:250, figs.; Sacc. **IX**:303; Syd. **I**:678, fig.). On leaves and sheaths of *Carex filicina*, Simla (Barclay).
- carthami* (Hutzelm.) Corda (Sacc. **VII**:646; Syd. **I**:35; 452:431; 455:256). On leaves of *Carthamus oxyacantha*, Kangra, Punjab; of *C. tinctorius*, Pusa (Butler); Punjab (Cheema).
- centaureae* Mart. (Sacc. **XVII**:286; Syd. **I**:39; 455:257). On leaves of *Centaurea calcitrapa*, Harwan, Kashmir (Butler); Peshawar (Shaw).
- cephalandrae-indicae* Syd. (452:433; Sacc. **XXI**:618). On leaves of *Coccinia (Cephalandra) indica*, Pusa and Nadiad, Bombay (Butler).
- chaerophylli* Purt. (Sacc. **XVI**:281; Syd. **I**:367). On *Anthriscus nemorosa*, Punjab (Gamble).
- chrysanthemi* Roze (Sacc. **XVI**:296; Syd. **I**:46; 452:431). On leaves of *Chrysanthemum indicum*, The Droog, Nilgiris (Butler).
- chrysopogi* Barclay (**35**, **II**:247, figs.; Sacc. **IX**:304; Syd. **I**:746; 453:497; **35**, **I**:363, figs., as *Aecidium jasmini* Barclay; 455:273; 48:241, figs., as *P. jasmini-chrysopogonis* Barclay; **319**, **I**:116 as "*Aecidium clematidis* DC."). Aecidia on leaves of *Jasminum humile*, Simla (Barclay); Kumaon (Inayat); Jaunsar, 9,000 ft. (Rogers); of *J.* sp., Harwan, Kashmir (Butler); teleuto stage on leaves of *Chrysopogon gryllus*, Simla (Barclay); Harwan, Kashmir (Butler).
- cichorii* (DC.) Belyneck (Sacc. **XVII**:311; Syd. **I**:49; 455:257). On leaves of *Cichorium intybus*, Harwan, Kashmir (Butler).
- cipurae* Syd. (453:496; Sacc. **XXI**:672). On leaves of *Cipura paludosa*, Royal Botanic Garden, Calcutta (Butler).
- circaeae* Pers. (Sacc. **VII**:686; Syd. **I**:422; **35**, **II**:235, fig.). On leaves of *Circua alpina*, Chor, near Simla, 9,000 ft. (Barclay).

- [*Puccinia*] *citrulli* Syd. & Butler (455:259; Sacc. XXIII:714). On leaves of *Citrullus colocynthis*, Coimbatore (Subramaniam).
- collettiana* Barclay (40:87, figs.; Sacc. IX:306; Syd. I:226; 453:495; 35, II:241, figs., as "*P. helvetica* L."). On leaves of *Rubia cordifolia*, Simla (Barclay); Ranikhet (Butler); Mussoorie (Kar); Kasauli (Butler). Lévillé (285:69) records "*Puccinia galiorum* Lk" [*P. punctata*] on leaves of "*Rubia munjista*" [*R. cordifolia*], India. It may have been *P. collettiana*.
- coronata* Corda (Sacc. VII:623, pro parte; Syd. I:699; 455:260; 319, I:116). Aecidia on leaves of *Rhamnus purpurea*, Deoban, 9000 ft. (Gamble); on *R. procumbens*, Mussoorie (Butler); uredo and teleuto stages on leaves of *Stipa* sp., Mussoorie; of *Poa flexuosa* and *Agropyron* sp., Harwan, Kashmir (Butler).
- cressae* (DC.) Lagerh. (Sacc. IX:307; Syd. I:320; 455:272 as *Aecidium cressae* DC.). On leaves of *Cressa cretica*, Gokak Government Farm, Bombay (Kulkarni).
- curculigonis* Racib. (Sacc. XVI:307; Syd. I:604; 452:433). On leaves of *Curculigo orchioides*, Wynaad (Butler); Dehra Dun (Kar).
- cynodontis* Desm. (Sacc. VII:661; Syd. I:748; 268:217; 452:436). On leaves of *Cynodon dactylon*, Saharanpur (Butler); Lyallpur (Hafiz Khan); Peshawar (Shaw); Ganeshkhind Botanic Garden, Poona (Gammie); Cawnpore, Surat, Kashmir (Butler). The aecidia on *Plantago* have not yet been recorded for India.
- dactylidina* Bubak (Sacc. XXI:698; 455:261). On leaves of *Dactylis glomerata*, Harwan, Kashmir (Butler).
- dispersa* Erikss. & Henn. (Syd. I:709; 263:323 as *P. rubigo-vera* (DC.) Wint.; Sacc. VII:624). "On leaves of an Asperifoliaceae" Siwalik Range (Gollan). A doubtful record.
- dissiliens* Cke (130:75; Sacc. VII:723; Syd. I:582). On leaves of *Rumex* sp. (resembling *R. acetosa*), Himalaya north of Dehra Dun (Fleming).
- dovrensis* Blytt (Sacc. XIV:311; Syd. I:80; 453:495). On leaves of *Erigeron alpinus*, Kumaon (Inayat). Barclay (43:218) referred a rust on *E. alpinus* var. *multicaulis*, near the banks of the Sutlej, Bashahr (Lace), doubtfully to *P. doloris* Speg. As Sydow points out (loc. cit.), it was probably *P. dovrensis*.
- droogensis* Butler (90:30, fig.; Sacc. XXI:616; 452:432; 369:231). On leaves of *Berberis aristata*, The Droog, Nilgiris (Butler).
- duthiae* Ellis & Tracy (227:283; Sacc. XIV:352; Syd. I:726; 452:435; 89:45). On leaves of *Andropogon pertusus*, Dehra Dun (Duthie); Poona (Chibber); Ranchi (Mitra); Phulgru (Watt); Dharwar and Kasauli (Butler); of *A. intermedius*, India (Duthie).

- [*Puccinia*] ? *elmsii* de Toni (Sacc. VII:651; Syd. I:356; 43:215, fig.). On leaves of *Angelica glauca*, Phagu, near Simla (Watt). Sydow (l.c.) states that this is probably a distinct species.
- engleriana* P. Henn. (Sacc. XVII:336; 455:258). On leaves of *Tabernaemontana heyneana*, Matheran, Bombay (Ajrekar).
- epilobii-tetragoni* (DC.) Wint. (Sacc. VII:608; Syd. I:424; 455:257). On leaves of *Epilobium* sp., Harwan, Kashmir (Butler).
- eulaliae* Barclay (43:216; Sacc. XI:199; Syd. I:797; 268:220). On leaves of "*Pollinia japonica*", Simla (Barclay). It would seem possible that Barclay had the grass formerly known as *Eulalia japonica*, now called *Miscanthus sinensis*. *P. eulaliae* is recorded on the latter host from Japan.
- excelsa* Barclay (43:216, fig.; Sacc. XI:194; Syd. I:286). On leaves of *Phlomis bracteosa* (*P. lamifolia*), Mahasu and Huttoo Peak, near Simla (Barclay).
- expallens* Syd. (453:496; Sacc. XXI:673). On leaves of *Hypoxis aurea*, Dehra Dun (Butler).
- fagopyri* Barclay (41:261; 35, III:107, fig.; Sacc. IX:306; Syd. I:566, fig.). On leaves of *Fagopyrum esculentum*, Simla (Barclay); Mussoorie (Kar).
- ferruginosa* Syd. (Sacc. XVII:280; Syd. I:13, fig.; 455:256). On leaves of *Artemisia* sp. (*A. vulgaris*), Shillong (Butler).
- flavipes* Syd. (453:497; Sacc. XXI:684). On leaves of *Fimbristylis miliacca*, Yelwal, Mysore (Butler).
- fragariae* Barclay (35, I:359, figs.; Sacc. IX:309; Syd. I:483; 35, II:244). On leaves of *Fragaria vesca*, Simla (Barclay).
- fusca* (Pers.) Wint. (Sacc. VII:669; Syd. I:530; 319, I:116). On *Anemone rivularis*, Himalaya (Gamble).
- gentianae* (Strauss) Link (Sacc. VII: 604; Syd. I:340; 35, III:108). On leaves of *Gentiana kurroo*, near Simla (Barclay).
- geranii-silvatici* Karst. (Sacc. VII:682; Syd. I:465, fig.; 455:257; 37:27, figs., as *P. geranii-silvatici* var. *himalensis* Barclay; 35, II:236; 211:269). On leaves and stems of *Geranium nepalense*, Simla (Barclay); Verinag, Kashmir (Butler). Sydow (I:466-8) is unable to maintain Barclay's variety. The name is written in error "*var. nepalensis* Barclay" in Sydow's Monograph (l.c.).
- glumarum* (Schm.) Erikss. & Henn. (Sacc. XVII:380; Syd. I:706; 116, figs.; 452:434; 111:152, figs.; 393:3; 363; 230). On leaves, culms, and glumes of *Triticum* spp. cult. and *Hordeum vulgare* throughout northern India; on leaves of *Phalaris minor*, Lyallpur, Hissar, and Dehra Dun (Butler); of *Brachypodium sylvaticum*, Simla (Butler).
- gracilentia* Syd. & Butler (455:263; Sacc. XXIII:729). On leaves of *Bambusa* sp., Darjeeling (McRae).
- graminis* Pers. (Sacc. VII:622; Syd. I:692; 35, I:367, figs.; 35, II:249, figs.; 319, I:116; 116, figs.; 452:434; 455:260; 111:152, figs.; 392:3; 393:3; 49;

140:117 as *Aecidium berberidis* Pers.). Aecidia on leaves of *Berberis vulgaris*, *B. aristata*, *B. lycium*, and *B. umbellata* in the Himalayas; uredo and teleuto stages on leaves, culms, and glumes of *Triticum* spp. cult. and *Hordeum vulgare* throughout northern and central India and Burma; of *Festuca gigantea*, Simla (Barclay); Harwan, Kashmir (Butler); of *F. kashmiriana* and *Brachypodium sylvaticum*, Harwan, Kashmir (Butler).

[*Puccinia*] *heterospora* Berk. & Curt. (Sacc. VII:695; Syd. I:472, fig.; 452:432).

On leaves of *Sida humilis*, Delhra Dun (Butler); Bombay (Dastur); Benares (Muckerji); of *S. spinosa*, Poona, Dharwar, and Hunsur, Mysore (Butler); Manigaon, Berars (Burkill); of *S. mysorensis*, Poona, and Mudigere, Mysore (Butler); of *S. cordifolia*, Dacca (Som); of *S. sp.*, Nagpur (Shrivastan); Fraserpet, Coorg (Butler); Ranchi (Mitra).

—*hieracii* (Schum.) Martius (Sacc. VII:633, pro parte; Syd. I:95). On leaves of *Hieracium crocatum*, Harwan, Kashmir (Butler).

—*himalensis* (Barclay) Diet. (215:63; Sacc. XVII:386; Syd. I:738 fig.; 47:227, figs., as *P. coronata* Cda var. *himalensis* Barclay; 453:498; 268:189; 35, I:358, figs., as *P. ?coronata* Cda; 35, II:248, figs.). Aecidia on leaves and stems of *Rhamnus dahurica*, Simla (Barclay); Harwan, Kashmir, and Kumaon (Butler); of *R. virgata*, Simla (Tucker); uredo and teleuto states on leaves and sheaths of *Brachypodium sylvaticum*, *Oryzopsis (Piptatherum) holciforme*, and *Festuca gigantea*, Simla (Barclay). In one paper (35, II:247, fig.) Barclay describes a teleuto stage also on *Agrostis hookeriana* as being almost identical with that on *Piptatherum* and *Festuca*, but in his final paper (47) it is not included.

Dietz (225) considers that *P. himalensis* cannot be maintained distinct from *P. lolii* as it occurs in America on the ground of host reactions, since the American oat rust was able to infect *Rhamnus dahurica*; but Dietel (215) and Sydow (I:738) consider that there are morphological differences between the two.

—*hookeri* Syd. (Syd. I:723, fig.; Sacc. XVII:379). On leaves of *Andropogon echinulatus*, Himalaya (Hooker f. & Thomson).

—*hydrocotyles* (Link) Oke (Sacc. VII:641; Syd. I:388; 452:432). On leaves of *Hydrocotyle polycephala*, Wahjain, Assam (Butler).

—*inayati* Syd. (453:494; Sacc. XXI:651). On leaves of *Lauraca nudicaulis*, Kumaon (Inayat); Burma (Butler); Wynaad and Darjeeling (McRae).

—*incompleta* Syd. (455:261; Sacc. XXIII:737). On leaves of *Ischaemum ciliare* var. *wallichii*, Panora, Wynaad (McRae); Chittagong (Sen).

—[*insidiosa* Berk. (57, No. 470; Sacc. VII:690; Syd. I:545). On leaves of *Clematis nutans*, Parasnath (Hooker f.), associated with *Uredo clematidis* (stage of *Coleosporium clematidis* Barclay). Sydow (449:56) found that no distinct species of *Puccinia* is represented in the original material, and it must be deleted.]

- [*Puccinia*] *invenusta* Syd. (453:498; Sacc. XXI:686). On leaves of *Phragmites karka*, Pusa (Butler); Kamrup District, Assam (Taslim).
- investita* Schw. (Sacc. VII:707; Syd. I:88, fig.; 453:494). On leaves of *Anaphalis* sp., The Droog, Nilgiris (Butler).
- iridis* (DC.) Wallr. (Sacc. VII:657; Syd. I:598; 35, III:105, fig.; 455:260). On leaves of *Iris florentina* and *I. pallida*, Simla (Barclay); of *I. kashmiriana*, Harwan, Kashmir (Butler); of *I. sp.*, Srinagar, Kashmir (Butler); Mussoorie (Kar).
- komarovi* Tranz. (Syd. I:451; Sacc. XVII:350; 35, III:106, fig., as "*P. ?argentata* Schultz"; 211:261 as *P. argentata* (Schultz). On leaves of *Impatiens amphorata*, Simla (Barclay); of *I. sp.*, Mussoorie (Butler).
- kozukensis* Diet. (Sacc. XVII:379; Syd. I:721; 455:260). On leaves of *Andropogon micranthus*, Maymyo (Butler).
- kuehnii* (Krueg.) Butler (108:81, figs.; Sacc. XXIII:744; Syd. IV:608; 111:380, figs.; 452:445 as *Uredo kuehnii* (Krueg.) Wakker & Went). On leaves of *Saccharum spontaneum*, Bassein, Burma (with teleuto stage; Inayat); Lyallpur (A. Khan); Pusa (Butler); of *S. fuscum*, Cawnpore and Saharanpur (Butler); of *S. arundinaceum*, Dehra Dun, Poona, Mozufferpore, and Pusa (Butler); Lahore (B. Das); Dehra Dun and Lyallpur (A. Khan); of *S. narenga*, Mussoorie (Butler); of *S. sara*, Lahore (B. Das); Wazirabad, Punjab (Cheema); of *S. sp.*, Bombay (Chibber). This rust occurs ordinarily only in the uredo stage.
- lateripes* Berk. & Rav. (Sacc. VII:649, pro parte; Syd. I:234; 455:257). On leaves of *Ruellia* sp., Pusa (Butler).
- lateritia* Berk. & Curt. (Sacc. XIV:321; Syd. I:211, fig.; 452:431; 453:495). On leaves of *Hedyotis vestita* and *H. auricularia*, Wahjain, Assam (Butler); of *Spermocoe stricta*, Coimbatore, Dehra Dun, and Yelwal, Mysore (Butler); of *S. sp.*, Hoshangabad (Butler).
- leonotidicola* P. Henn. (Sacc. XVII:328; Syd. I:280; 455:271 as *Uredo leonotidis* P. Henn.; Syd. IV:566). On leaves of *Leonotis nepetacifolia*, Islampur, Bombay (Chibber); Belgaum, Bombay (Kulkarni).
- leptodermidis* Barclay (35, III:87, 109, figs.; Sacc. IX:303; Syd. I:222; 455:257). On leaves and stems of *Leptodermis lanceolata*, Simla (Barclay); Kasauli (Butler).
- leucadis* Syd. (Sacc. XVII:329; Syd. I:281, fig.; 445:487). On leaves of *Leucas urticaefolia*, Coimbatore (McRae); of *L. sp.*, Mahableshwar, Bombay (Chibber).
- leucophaea* Syd. & Butler (455:258; Sacc. XXIII:749). On leaves of *Colquhounia coccinea*, Mussoorie (Butler).
- lolii* Niels. (Sacc. XI:203 as *P. coronifera* Kleb.; Syd. I:704; 453:498; 111:179, fig.). On leaves of *Avena sativa*, Pusa (Butler). The crown rust of oats has been reported only once in India, in 1907, when there was a

moderate epidemic at Pusa. *P. himalensis* (q.v.) is a similar or possibly identical rust occurring in the Himalayas.

- [*Puccinia*] *lycoctoni* Fekl (Sacc. XVII:358; Syd. I:527; 453:496). On leaves of *Aconitum lycoctonum*, Simla (Watt).
- macrorrhynchi* Rabenh. (387:89; Sacc. VII:673; Syd. I:120, fig.). On leaves of "*Macrorrhynchus asplenifolius*", Royal Botanic Garden, Calcutta (Kurz). The host may perhaps have been *Microrrhynchus asplenifolius*, now placed in *Launaea*.
- maydis* Bérang. (Sacc. VII:659 as *P. sorghi* Schw.; Syd. I:830; 452:434; 111:191, figs.; 43:214 as *P. sorghi* Schw.). On leaves of *Zea mays*, Mashobra, near Simla (Barclay); Manjri Farm near Poona, and Kashmir (Butler).
- melanocephala* Syd. (453:500; Sacc. XXI:685). On leaves of *Arundinaria* sp., Wahjain, Assam (Butler).
- menthae* Pers. (Sacc. VII:617; Syd. I:282; 35, II:242; 452:432; 453:495; 455:258). On leaves of *Origanum vulgare*, Simla (Barclay); Kumaon (Inayat); Mussoorie (Kar); Harwan and Beri Nag in Kashmir, Ranikhet, and Kasauli (Butler); of *Calamintha umbrosa*, Mussoorie (Butler); of *C. clinopodium*, Harwan, Kashmir (Butler); of *Mentha sylvestris*, Bilaspur (Burkill); Peshawar (Shaw); Shadipur, Kashmir (Butler).
- mysorensis* Syd. & Butler (452:434; Sacc. XXI:683; 369:234). On leaves and culms of *Kyllinga triceps*, Hunsur, Mysore (Butler).
- nakanishikii* Diet. (Sacc. XXI:691; 452:435). On leaves of *Andropogon nardus*, Hunsur, Mysore (Butler); Wynaad (McRae); of *A. laniger*, Punjab (Chcema).
- nepalensis* Barclay & Diet. (211:265; Sacc. IX:309; Syd. I:578, fig.; 35, II:240, fig., as *P. acetosae* Schum.; 455:259). On leaves of *Rumex nepalensis*, Simla (Barclay); of *R. orientalis*, Harwan, Kashmir (Butler); of *R. sp.*, Kasauli (Butler); Mussoorie (Mitra).
- neyraudiae* Syd. (455:260; Sacc. XXIII:741). On leaves of *Neyraudia madagascarensis*, Mungpoo, Darjeeling (Kawakami).
- nitida* Barclay (35, III:107, fig.; Sacc. IX:307; Syd. I:574; 455:259). On leaves of *Polygonum amplexicaule*, Mashobra, near Simla (Barclay); of *P. chinensis*, Tukwar, Darjeeling (McRae); of *P. sp.*, Mussoorie, and Verinag, Kashmir (Butler).
- obscura* Schroet. (Sacc. VII:629; Syd. I:645; 453:497). On leaves of *Luzula campestris*, Cherrapunji, Assam (Butler).
- oligocarpa* Syd. & Butler (455:262; Sacc. XXII:746). On leaves of *Stipa* sp., Harwan, Kashmir (Butler).
- oplismeni* Syd. (452:436; Sacc. XXI:702). On leaves of *Oplismenus compositus*, Mussoorie (Butler); of *O. sp.*, Kumaon (Butler).
- oryzopsidis* Syd. & Butler (453:498; Sacc. XXI:702). On leaves of *Oryzopsis molinioides*, Ranikhet, Kumaon (Butler).

- [*Puccinia*] *pachypes* Syd. (455:262; Sacc. XXIII:745). On leaves of *Spodiopogon albidus*, Vayitri, Wynaad (McRae).
- paspali* Tracy & Earle (Sacc. XIV:348; Syd. I:774; 452:436; 455:262; 89:45). On leaves of *Paspalum* (*Panicum*) *sanguinale*, Dehra Dun, Hoshangabad, and Bassein, Bombay (Butler); Lyallpur (Hafiz Khan); of *P. sanguinale* var. *ciliare*, Pusa (Butler); of *P. sanguinale* var. *debile*, Royal Botanic Garden, Calcutta (Butler).
- penniseti* Zimmerm. (Sacc. XVII:390; 452:435; 111:224, figs.). On leaves of *Pennisetum typhoideum*, Nagpur, Pusa, Poona, Cawnpore, Trichinopoly, and Dohad Farm, Bombay (Butler); Dhulia, Bombay. Barclay (41:257; 43:215; see also Watt, 521:35, 124, 127) gave the name "*P. penniseti* Barclay" in 1890, without formal description, to a rust on *Pennisetum typhoideum* which, however, he confused with *Puccinia purpurea* (q.v.), since he states that the rust on *Zea mays* (*P. maydis*) is distinct from the rust on *Sorghum* and *Pennisetum* (*P. penniseti*). (See also Syd. I:805).
- peraffinis* Syd. (445:326; Sacc. XXIII:666). On leaves of *Justicia diffusa*, Nandi Droog, Mysore (Anstead).
- persistens* Plowr. (Sacc. IX:312; Syd. I:825; 35, I:362, figs., as *Accidium ?thalictri-flavi* DC.). On leaves of *Thalictrum javanicum*, Simla (Barclay).
- phlogacanthi* Syd. (443, VI:143; Sacc. XXIII:667). On leaves of *Phlogacanthus guttatus*, Sylhet (Griffith and Wallich).
- phragmitis* (Schum.) Koern. (Sacc. VII:630; Syd. I:787; 130:75 as *Accidium rubellum* Pers.; 236:273). On leaves of *Rumex* sp. ("the common dock"), Himalaya north of Dehra Dun (Fleming).
- pimpinellae* (Strauss) Martius (Sacc. VII:616, pro parte; Syd. I:408; 35, I:356, figs.; 35, II:244, fig.; 453:495). On leaves of *Pimpinella diversifolia*, Simla (Barclay); Kumaon (Inayat); Harwan, Kashmir (Butler); of *P. sp.*, Mussoorie (Butler).
- pollinae* Barclay (35, II:243; Sacc. IX:313; Syd. I:798; 33:21, figs., as *Accidium strobilanthis* Barclay; 35, I:369; 452:436). Accidia on leaves of *Strobilanthes dalhousianus*, Simla (Barclay); of *S. sp.*, Dehra Dun (Butler); Mussoorie (Kar); Amboli, Belgaum; uredo and teleuto stages on leaves of *Pollinia nuda*, Simla (Barclay).
- polygoni-amphibii* Pers. (Sacc. XVII:394; Syd. I:569; 455:259; 286:271 as *P. polygonorum* Link; 403:301 as *P. ?polygoni* Pers.). "India orient. Jacquemont" (this specimen was not found at Paris); on leaves of *Polygonum* sp., Mussoorie (Kar); of *P. persicaria*, Harwan, Kashmir (Butler).
- porri* (Sowerby) Wint. (Sacc. VII:605; Syd. I:610; 113(19):54 as "*P. porri* Saw."). Accidiospores and teleutospores of a rust on leaves on onion (*Allium cepa*), Lyallpur, were reported by McRae to resemble *P. porri* very closely.
- prainiana* Barclay (44:67, figs.; Sacc. XI:197; Syd. I:635, figs.; 36:37, figs., as *Caeoma smilacinis* Barclay; 35, III:95 as *C. smilacis* Barclay; 211:269).

On leaves of *Smilax aspera*, Simla (Barclay); Mussoorie, Kumaon, and The Droog, Nilgiris (Butler); of *S. elegans*, Ranikhet, Kumaon (Butler); of *S. macrophylla*, Mahabaleshwar, Bombay (Chibber); of *S. sp.*, Noakhali, and Bilin, Burma (Butler); Wynaad (McRae); Khasi Hills (Subramaniam).

*Puccinia] prenanthis-purpureae* (DC.) Lindr., var. *himalensis* Barclay (44:65, figs.; Sacc. **XI**:189; Syd. **I**:136). On leaves of *Prenanthes brunoniana* and *Lactuca macrorrhiza*, Simla (Barclay). Sydow (l.e.) thinks this variety may deserve specific rank.

—*princeps* Syd. (452:432; Sacc. **XXI**:659). On branches of *Pogostemon* sp., Dehra Dun (Butler).

—*propinqua* Syd. & Butler (453:499; Sacc. **XXI**:692). On leaves of *Andropogon* sp., Ranikhet, Kumaon (Butler).

—*prunicolor* Syd. & Butler (452:435; Sacc. **XXI**:693). On leaves of *Andropogon serratus*, Dehra Dun (Butler).

—*pruni-persicae* Hori (Sacc. **XXIII**:770; 445:487). On leaves of *Prunus persica*, Coimbatore (McRae). This specimen has not been seen by us, and was determined by Sydow from the uredo stage, which alone was present. A specimen similarly determined by McRae from Pusa has been examined and found to consist of typical *P. pruni-spinosae* uredosori. Specimens of Hori's fungus distributed as Sydow, Fungi exotici exsiccati No. 471 "in foliis *Pruni persicae*, Prov. Totomi, Yaizu, Japonia, K. Hara" have been examined and found to bear uredospores intermixed with the teleuto and of a quite different type from those of *P. pruni-spinosae*. They are also quite different from the uredo stage of *P. pruni-persicae* as described and figured by Hori in *Phytopath.*, II: p. 144, 1912, nothing resembling which was found in Hara's specimen. The uredo described by Hori agrees with that of *P. pruni-spinosae* and it would appear that he was mistaken in thinking that the two stages he describes belonged to the same fungus. As the Indian record is based on the uredo, it should probably be deleted.

—*pruni-spinosae* Pers. (Sacc. **VII**:648; Syd. **I**:484; 144:96, as *Uromyces amygdali* Oke; 452:432; 455:258). On an unnamed host, Belgaum (Hobson); on leaves of *Prunus persica*, Pusa (Butler); and several other collections in India and Burma (some of which may be the preceding species); of *P. armeniaca*, Shillong (Som); Maymyo (Butler); of *P. communis*, Verinag, Kashmir (Butler); of *P. puddum*, Bageswar, Kumaon (Inayat). Barclay (35, I:363) mentions an *Aecidium* on *Thalictrum minus* which he collected in the interior of the Himalaya towards Tibet, and which was characterized by the production of considerable distortion and hypertrophy of the host. This may have been the aecidial stage of *P. pruni-spinosae*. (See Syd. **IV**:350.)

—*pulvinata* Rabenh. (Sacc. **VII**:711; Syd. **I**:76, fig.; 43:219; 455:257). On leaves of *Echinops niveus*, Simla (Watt); of *E. echinatus*, Lahore (B. Das); of *E. cornigerus*, Verinag, Kashmir (Butler).



- [**Puccinia**] **punctata** Link (Sacc. **XVII**:393; Syd. **I**:213; **35**, **II**:239, figs., as *P. galii* Pers.). On leaves of *Galium aparine*, Simla (Barclay). Sydow (**I**:217) includes this record under *P. ambigua* (A. & S.) Lagerh., presumably because the host is *Galium aparine*: but Barclay describes and figures uredospores, which are unknown in *P. ambigua*. He states that there is no aecidial stage, but both *P. ambigua* and *P. punctata* have aecidia. As for the host, *P. punctata* is described on *Galium aparine* in North America. See *P. colletiana*.
- purpurea** Cke (**133**:15, with figure referred to "*Trichobasis purpureum* Cke"; Sacc. **VII**:657; Syd. **I**:803; **452**:434; **111**:206, fig.; **392**:2). On leaves of *Andropogon sorghum* (*Sorghum vulgare*), India (Hobson); Coimbatore, Poona, Ranchi, Surat, and Maymyo, Burma (Butler); Arvu and Phulgaon (Watt); of *A. halapensis*, Mandalay (Shaw); Lahore (Cheema); Pusa and Dehra Dun (Butler). Barclay first (**41**) referred the rust on *A. sorghum* to *Puccinia sorghi*, but later (**43**:214; see Watt, **521**) to *P. penniseti* Barclay (non Zimm.); see above.
- pusilla** Syd. (**452**:435; Sacc. **XXI**:693). On leaves of *Andropogon assimilis*, Dehra Dun (Butler).
- romagnoliana** Maire & Sacc. (Sacc. **XVII**:374; Syd. **I**:682; **453**:497; **452**:443 as *Uredo? cypericola* P. Henn.). On leaves of *Cyperus rotundus*, Calcutta, Surat, Pusa, Dehra Dun, Saharanpur, Chittagong, Hoshangabad, and Samalkota Farm (Butler); Lyallpur (Hafiz Khan); Rangpur (Mittra); Lahore (B. Das); of *C. tegetum*, Pusa (Butler); of *C. compressus* and *C. arenarius*, Chatrapur, Ganjam (Butler); of *C. capitatus*, Surat, and *C. tuberosus*, Samalkota (Butler); of *C. sp.*, Nagpur (Pandit); Ranchi (Mittra); Hmawbi, Burma (Butler).
- rosae** Barclay (**35**, **II**:233, figs.; Sacc. **IX**:299; Syd. **I**:487). On leaves and branches of *Rosa macrophylla*, Narkanda, near Simla (Barclay). Sydow **448**:168) transfers this to the new genus *Teloconia*.
- roscoeae** Barclay (**35**, **II**:237, fig.; Sacc. **IX**:307; Syd. **I**:596; **455**:260). On leaves of *Rosoca alpina*, Simla (Barclay); of *R. sp.*, Mussoorie (Butler).
- rostrata** Cke (**132**:116; Sacc. **VII**:693; Syd. **I**:516; **130**:75 as *P. cruciferarum* Cke; **236**:273, figs.; **449**:58). On leaves of some member of the Cruciferae, Himalaya north of Dehra Dun (Fleming); redescribed by Sydow (**449**).
- ruelliae** (Berk. & Broome) Lagerh. (Sacc. **XIV**:324; Syd. **I**:235; **452**:432). On leaves of *Ruellia longifolia*, Cawnpore (Butler); of *R. prostrata*, Pusa, and Hunsur, Mysore (Butler); Nagpur (Pandit); Calcutta; of *R. sp.*, Benares (Muckerji); Godavari (Mittra); Samalkota (Subramaniam); Belgaum (Kulkarni).
- rufipes** Diet. (Sacc. **XVII**:377; Syd. **I**:757; **452**:436). On leaves of *Imperata arundinacea*, Dehra Dun, Kumaon, South Sylhet, Pusa, and Moulmein (Butler); Saharanpur (B. Das); Samalkota (Subramaniam); of *I. sp.*, Wynaad.

- uccinia] saniculae** Grev. (Sacc. VII:618; Syd. I:413; 453:495; 35, I:352, figs., as *Aecidium saniculae* Barclay). On leaves of *Sanicula europaea*, Simla (Barclay); Kumaon (Inayat).
- ? saussureae** Thuem. (Sacc. VIII:708; Syd. I:140; 455:257). On leaves of *Saussurea* sp., Nagpur (Pandit). Uredo only, so the identification is doubtful.
- saxifragae-ciliatae** Barclay (35, II:234, figs.; Sacc. IX:299; Syd. I:506, fig.). On leaves of *Saxifraga ligulata* var. *ciliata*, Simla (Barclay); on *S.* sp., Mussoorie (Kar).
- saxifragae-micranthae** Barclay (43:218; Sacc. XI:185; Syd. I:506). On leaves of *Saxifraga micrantha*, Bashahr, near Simla, 9,500 ft. (Lace).
- schirajewskii** Tranz. (Sacc. XXIII:698; 455:257). On leaves of *Serratula pallida*, Harwan, Kashmir (Butler).
- scirpi** DC. (Sacc. VII:659; Syd. I:688; 455:260; 455:274 as *Aecidium nymphoidis* DC.). Accidia on leaves of *Limnanthemum* sp., Comilla (Subramaniam); Wular Lake, Kashmir (Butler); uredo and teleuto stages on leaves of *Scirpus articulatus*, Godavari (Sundararaman); Bassein, Bombay (Chibber); of *S. barbatus*, Ganjam (Butler); of *S.* sp., Lahore (B. Das). Sydow (455:274) thinks it very doubtful that the *Aecidium* really belongs to *P. scirpi*.
- solanacearum** Sacc. & Syd. (Sacc. XIV:358; Syd. I:274; 142:61 as *P. solani* Cke (non Schw.); 449:58, with revised diagnosis). On leaves and stems of *Solanum* sp., Sulej Valley, Himalaya (Gamble). Cooke mentioned that the teleuto stage was associated with "*Aecidium solani*," but Sydow (449) considers that the two stages probably belong to the same rust.
- solmsii** P. Henn. (Sacc. XIV:357; Syd. I:568, fig.; 453:496). On leaves of *Polygonum chinense*, Koppa in Mysore, Wynaad, and Wahjain, Assam (Butler); Darjeeling (McRae); Mahableshwar, Bombay (Chibber); of *P. alatum*, Kumaon (Inayat); of *P.* sp., Nangpo, Assam, and Maymyo (Butler); Darjeeling (McRae).
- sonchi** Rob. (Sacc. VII:638; Syd. I:154, fig.; 453:494). On leaves of *Launaea nudicaulis*, Koppa, Mysore and Srinagar, Kashmir (Butler); Kumaon (Inayat).
- spongiosa** Berk. & Broome (Sacc. VII:703; Syd. I:228, fig.; 452:431; 326:110). On leaves of *Webera corymbosa*, Hunsur, Mysore (Butler); Coimbatore District (McRae).
- suaveolens** (Link) Rostrup (Sacc. VII:633, pro parte; Syd. I:53, 856; 455:257). On leaves of *Oniscus argyranthus*, Shadipore, Kashmir (Butler), of *Cirsium arvense*, Pusa (Kar); of *C.* sp., Kamrup, Assam (Taslim); Lahore (B. Das).
- taraxaci** (Rebent.) Plowr. (Sacc. IX:305; Syd. I:164; 452:430; 455:257; 35, II:238, figs., as *P. flosculosorum* Alb. & Schw.). On leaves of *Taraxacum officinale*, Simla (Barclay); Chindi, Himalaya (Burkill); Gulchina in Kumaon, Kasauli, and Harwan, Kashmir (Butler); of *T. watti*, Ranikhet, Kumaon (Butler).

- [*Puccinia*] *thwaitesii* Berk. (Sacc. VII:720; Syd. I:233, fig.; 452:431). On leaves of *Justicia gendarussa*, Koppa in Mysore, Tellicherry in Malabar, Comilla, and Insein, Burma (Butler); Dacca (Som); Wynaad (McRae); Calcutta; Rangoon.
- *triticea* Erikss. (Sacc. XVII:376; Syd. I:716; 116, figs.; 452:434; 111:154, figs.; 392:3; 363; 49; 230). On leaves of *Triticum* spp. cult., common in Bengal, Bihar, United Provinces, Central Provinces, Punjab, Kashmir, and Burma.
- *urticae* Barclay (34:38, figs.; Sacc. IX:299; Syd. I:590, fig.; 35, II:234, fig.; 455:259). On leaves of *Urtica parviflora*, Simla (Barclay); Kasauli (Butler); of *U. sp.*, Mussoorie (Kar). The *Aecidium* which Barclay found on the same host is now believed to belong to *P. caricis* (q. v.).
- *ustalis* Berk. (57, No. 469; Sacc. VII:691; Syd. I:546; 43:217, fig.). On leaves of *Ranunculus pulchellus*, Momay Samdong, Sikkim, 15,500 ft. (Hooker f.); of *R. hirtellus*, Mattiana, near Simla (Barclay). Berkeley states "some species of *Ranunculus pulchellus*," so he may have had uncertainty as to the host.
- *versicolor* Diet. & Holw. (Sacc. XIV:352; Syd. I:724, fig.; 452:436). On leaves of *Andropogon contortus*, Belgaum, Dharwar, Poona, near Pusa, and Maymyo (Butler); Kumaon (Inayat); Wynaad (McRae); of *A. sp.*, Maymyo (Butler).
- *violae* (Schum.) DC. (Sacc. VII:609; Syd. I:439; 35, II:234; 453:495; 521:84; 142:61 as *Aecidium violae* Schum.; 35, I:354, figs., as *A. ? violae* Schum.). On leaves of *Viola* sp., Simla (Gamble); Mussoorie (Kar); on leaves, petioles, and stalks of *V. serpens*, Simla (Barclay); Ranikhet in Kumaon, and Harwan, Kashmir (Butler); on *V. suaveolens* (Watt). Watt states (521:84, footnote) that Barclay thought the form on *Viola suaveolens* might possibly prove to be a new species. Where it was collected is not mentioned.
- *wattiana* Barclay (35, III:109; Sacc. IX:298; Syd. I:544, fig.). On leaves and petioles of *Clematis puberula*, Sutlej Valley, near Suni (Watt); of *C. connata*, Harwan, Kashmir (Butler); of *C. buchaniana*, Kumaon (Inayat); of *C. gouriana*, Dehra Dun and Almora (Inayat); of *C. sp.*, Mussoorie (Butler).
- *xanthopoda* Syd. (453:496; Sacc. XXI:683). On leaves of *Scleria* sp., Ranikhet, Kumaon (Butler).
- *xanthosperma* Syd. (452:437; Sacc. XXI:686). On leaves of *Bambusa* sp., Mussoorie (Butler).
- Pucciniastrum agrimoniae* (Schw.) Tranzsch. (Syd. III:446; 452:439; 455:270; 43:229 as *Uredo agrimoniae* Schroet.; Sacc. VII:339; 130:75 as "*U. polentillarum* DC."). On leaves of *Agrimonia* sp., Himalaya (Fleming); of *A. eupatorium*, Simla (Barclay); Kumaon (Inayat); Mussoorie (Butler); of *A. pilosa*, Simla; of *A. sp.*, Cherrapunji, Assam (Subramaniam).

- [*Pucciniastrum*] *castaneae* Diet. (Sacc. **XVII**:401; Syd. **III**:453; 455:270). On leaves of *Castanopsis javanica*, Maymyo (Butler).
- celastri* Syd. (453:503; Sacc. **XXI**:732; Syd. **III**:454). On leaves of *Celastrus paniculatus*, Kumaon (Inayat).
- coriariae* Diet. (Sacc. **XVI**:320; Syd. **III**:452; 453:503). On leaves of *Coriaria nepalensis*, Almora (Inayat); Mussoorie (Kar).
- Pucciniostele clarkiana* (Bacley) Diet. (214:564, fig.; Syd. **III**:327, fig.; 224:95, fig.; 455:267, fig.; 216:20; 221, **III**:312; 43:222, fig., as *Xenodochus clarkiana* Bacley; Sacc. **XI**:208). On leaves of *Astilbe rivularis*, Cheong forest, Simla (Bacley); Darjeeling (Burkill); of *A. japonica*, Jaunsar (Gamble); of *A. sp.*, Dumpep, Khasi Hills, Assam (Burkill).
- Komarov and Tranzschel (see 276) confused this species with one found in Manchuria: that two species occur was pointed out by Dietel (216). *P. clarkiana* Kom. & Tranz. refers to the species now called *P. mandschurica* Diet. Saccardo, Syll. **XVI**:321, refers in part to the latter species, which has not been found in India.
- Cooke (142:61) perhaps saw *P. clarkiana*, as noted above under *Phragmidium disciflorum*.
- Ravenelia breyniae* Syd. (453:501; Sacc. **XXI**:774; Syd. **III**:291, fig.; 369:239). On leaves of *Breynia rhamnoides*, Pusa (Butler); Wynaad (McRae); Allahabad (Mitter; Sydow, Fungi exot. exs., No. 163).
- emblicae* Syd. (452:438; Sacc. **XXI**:744; Syd. **III**:293). On leaves of *Phyllanthus emblica* (*Embllica officinalis*), Dehra Dun and Maymyo (Butler); Nagpur (Pandit). Cunningham (186:230, pl. XI, fig. 13) described and figured what was evidently this fungus from Tanjore, Madras. The host was subsequently stated (189) to be *P. emblica*. The rust referred by Cooke (144:96; 146:386, fig.) to *R. aculeifera* Berk., on leaves of an unknown tree, Belgaum (Hobson), appears to be *R. emblicae*, and according to Mr. C. E. C. Fischer, of Kew, the host is really *P. emblica*.
- hobsoni* Cke (146:386, figs.; Sacc. **VII**:772; Syd. **III**:287, fig.; 218:400; 452:437 as *R. stictica* Berk. & Broome; 133:15; 189, figs.; 369:238). On leaves of *Pongamia glabra*, India (Hobson); Calcutta (Cunningham); Madras and Nagina (Butler); Bandra, Bombay (Dastur). Dietel (218) and Sydow restrict the name *R. stictica* to the rust occurring on *Mundulea*, which has not been recorded in India.
- indica* Berk. (55:132, fig.; Sacc. **VII**:772; Syd. **III**:257, fig.; 57, No. 465; 146:385, fig.; 218:391; 212:51). This name has become much confused. Berkeley originally described it as "on pods of *Acacia* sp., Dunway Pass, Behar" (Hooker f.). Mr. C. E. C. Fischer, of Kew, kindly examined the two pods constituting the type, and he finds it to be not *Acacia*, but *Albizzia*, and evidently *Albizzia procera*. The rust appears to be that now known as *R. sessilis*. Subsequently Berkeley (57, No. 465) recorded *R. indica* "on

- pods and stems of *Abrus*, Paras Nath" (Hooker f.). Mr. Fischer examined these specimens, and found them to be not *Abrus* sp., but *Cassia absus*. The rust, which has teleutospores rather similar in aspect to those of the preceding collection, is still known as *R. indica*. Berkeley and Broome (67:93) later recorded *R. indica* from Ceylon on "*Bauhinia tomentosa* and *Cassia abrus*". The latter specimen is at Kew, labelled "*Cassia absus*", the "*abus*" being a misprint. The rust here also is what is known now as *R. indica*. The *Bauhinia* reference was evidently an error (218; 369:238). Arthur (20:196), Dietel, and Sydow record *R. indica* as occurring only in Ceylon and Mexico. India should be included, and the name *R. indica* may perhaps best be conserved for the rust on *Cassia absus*, despite the fact that the type was on another host, and was evidently really *R. sessilis*.
- [Ravenelia] mitis** Syd. (443, XIV:257; Sacc. XXIII:805). On leaves of *Tephrosia purpurea*, N. W. Himalayas (Hooker f. & Thomson). See *Uredo tephrosiae* Rabenh., below.
- **ornata** Syd. (452:437; Sacc. XXI:738; Syd. III:234, fig.; 369:238). On leaves of *Abrus pulchellus*, Dehra Dun; Wahjain, Assam (Butler).
- **sessilis** Berk. (Sacc. VII:773; Syd. III:248; 189, figs.; 218:384, fig.; 146:386, fig.; 212, fig.; 452:437). On leaves and fruit of *Albizzia lebbek*, Calcutta (Cunningham); Dehra Dun, Raipur, Pusa, Cawnpore, Noakhali (Butler); Nagpur (Pandit); Ramhati, Bengal (Bannerji); Ramgarh, Kumaon (Mitra); Chittagong (Sen); Arrah (Bhattachariya). Sydow (448:165) transfers this to the genus *Haploravenelia*. See also *Sphaerophragmium acaciae* below, and *R. indica* above.
- Schroeteriaster cingens** Syd. (455:270; Sacc. XXII:841; Syd. III:404). On leaves of *Bridelia tomentosa* var. *chinensis*, Rangpur, Bengal (Som); Assam (Subramaniam); on *B. sp.*, Mussoorie (Kar).
- **ehretiae** (Hirats.) Syd. & Butler (455:270; Sacc. XXIII:842; Syd. III:405). On leaves of *Ehretia acuminata*, Chittagong (Sen).
- Sphaerophragmium acaciae** (Cke) P. Magn. (307:121, figs.; Sacc. XI:209; Syd. III:185, fig.; 144:94 as *Triphragmium acaciae* Cke). On leaves of *Albizzia lebbek*, Belgaum (Hobson); Calcutta (Cunningham); Daeca (Som); Myitnge, Burma (Shaw). The teleutospores of this fungus were thought by Cunningham (189:21, figs.) to be a second teleuto form of *Ravenelia sessilis*.
- Thekopsora gaultheriae** Syd. (Syd. III:466; 453:503 as *Pucciniastrum gaultheriae* Syd.; Sacc. XXI:733). On leaves of *Gaultheria nummularioides*, Kumaon (Inayat).
- Triphragmium thwaitesii** Berk. & Broome (Sacc. VII:770 and XVI:322; Syd. III:180, fig.; 455:264). On leaves of Araliaceae, Pussimbing, Darjeeling (McRae); of *Heptupleurum* sp., Nilgiris (Barber). Petch (367, IV:163) deals fully with the confusion between this species and *T. clavellum*. Sydow (448:170) transferred *T. thwaitesii* to the genus *Nyssopsora* Arth.

- Uredo acori** Racib. (Sacc. XVI:357; Syd. IV:521; 452:443). On leaves of *Acorns calamus*, Gauhati, Assam (Butler); Bombay (Chibber).
- apludae** Barclay (35, III:99; Sacc. IX:333; Syd. IV:531). On leaves of *Apluda aristata*, Simla (Barclay). This stage may belong to one of the species of *Uromyces* or *Puccinia* found on *Apluda*.
- cajani** Syd. (452:442; Sacc. XXI:792; Syd. IV:473). On leaves of *Cajanus indicus*, Pusa (Butler).
- colebrookiana** Barclay (43:227; Sacc. XI:225; Syd. IV:417). On leaves of *Colebrookea oppositifolia*, Suni, near Simla (Watt).
- courtoisiae** Syd. (440:22; Sacc. XVII:456; Syd. IV:522). On leaves of *Courtoisia cyperoides*, Khasi Hills (Hooker f. & Thomson).
- ? cypericola** P. Henn. (Sacc. XIV:405; Syd. IV:523; 452:443). On leaves of *Cyperus rotundus*, Dehra Dun, Calcutta, Cawnpore, Pusa, and Hunsur, Mysore (Butler); Saharanpur (Gollan); of *C. capitatus*, Surat, and *C. tuberosus*, Samalkota (Butler).
- deutziae** Barclay (35, III:100; Sacc. IX:328; Syd. IV:489). On leaves of *Deutzia corymbosa*, Simla (Barclay).
- dioscoreae** P. Henn. (Sacc. XIV:402; Syd. IV:512; 455:276). On leaves of *Dioscorea* sp., Darjeeling (McRae).
- dioscoreae-sativae** Syd. (455:271; Sacc. XXIII:925; Syd. IV:514). On leaves of *Dioscorca sativa*, Chaumuhani, Noakhali District (Butler).
- ehretiae** Barclay (43:228; Sacc. XI:225; Syd. IV:423). On leaves and petioles of *Ehretia acuminata* (*E. serrata*), Tons River near Chakrata (Gamble). An anomalous form with pycnidia and cup-like sori; perhaps an *Acidium*.
- erythrinae** P. Henn. (Sacc. XXI:790; Syd. IV:480). On leaves of *Erythrina* sp., Noakhali, Bengal (Butler).
- exasperata** (Cke) de Toni (Sacc. VII:846; Syd. IV:555; 143:95, as *Trichobasis exasperata* Cke). On leaves of an unknown tree, Belgaum (Hobson).
- fuirenae** P. Henn. (Sacc. XVI:359; Syd. IV:525; 452:443). On leaves of *Fuirena umbellata*, Wynaad, of *F. glomerata*, Bassein, Burma, and *F.* sp., Tellicherry, Malabar (Butler).
- gomphrenae** Barclay (35, III:99, fig., written *U. "gomphrenensis"*; Sacc. IX:327; Syd. IV:494; 453:491 as *?Uromyces cyathulae* P. Henn.). On leaves and stems of *Gomphrena globosa*, Simla (Barclay); on leaves of *Cyathula capitata*, Kumaon (Inayat); Mussoorie (Kar).
- hemidesmi** Syd. (455:271; Sacc. XXIII:918; Syd. IV:428). On leaves of *Hemidesmus indicus*, Chittagong (Sen).
- ichnocarpi** Barclay (43:228; Sacc. XI:226; Syd. IV:432; 452:442). On leaves of *Ichnocarpus frutescens*, Suni, near Simla (Barclay); Kanaighat in Sylhet, and Yelwal, Mysore (Butler); Dacca and Dehra Dun (Kar). Sydow and Petrak (458:426) suggest that this form may be the uredo stage of *Achrotelium ichnocarpi* Syd., nov. gen., nov. sp., found in the Philippines.

- [*Uredo*] *ignobilis* Syd. (452:444; Sacc. XXI:807; Syd. IV:548). On leaves of *Sporobolus diander*, Pusa (Butler); of *S. sp.*, Comilla (Inayat).
- ischaemi* Syd. & Butler (453:509; Sacc. XXI:807; Syd. IV:540). On leaves of *Ischaemum timorense*, Chittagong (Sen).
- lipocarphae* Syd. (453:509; Sacc. XXI:806; Syd. IV:526). On leaves of *Lipocarpha sphacelata*, Yelwal, Mysore (Butler).
- microspora* (Vize) Sacc. (Sacc. IX:330; Syd. IV:401; 133:14, fig., as *Trichobasis microspora* Vize). On leaves "of Compositae". Locality and collector not stated, but the packet is marked India and the collector is given on it as Hobson who collected mainly around Belgaum. Sydow (l. c.) considers that the host may be one of the Leguminosae, and the rust perhaps a *Ravenelia*.
- operta* Syd. & Butler (453:509; Sacc. XXI:808; Syd. IV:536; 111:242, fig.). On leaves of *Coix lacryma-jobi*, Wynaad (Butler); of *C. sp.*, Wynaad (McRae).
- ophiuri* Syd. & Butler (452:445; Sacc. XXI:812; Syd. IV:542). On leaves of *Ophiurus corymbosus*, Dehra Dun.
- paederiae* Syd. (Sacc. XVII:439; Syd. IV:407; 455:271). On leaves of *Paederia foetida*, Chittagong (Sen). *Acididium paederiae* Diet. occurs on the same leaves and is perhaps genetically connected.
- panacis* Syd. (440:22; Sacc. XVII:443; Syd. IV:442). On leaves of *Aralia* (*Panax*) *pseudo-ginseng*, Sikkim (Hooker f. & Thomson).
- paspali-scribiculati* Syd. (452:444; Sacc. XXI:808; Syd. IV:544; 453:509; 111:240, fig.). On leaves of *Paspalum scribiculatum*, Kanaighat in Sylhet, and Kumaon (Butler).
- pileae* Barclay (43:228; Sacc. XI:227; Syd. IV:500). On leaves of *Pilea trinervia*, Mashobra, near Simla (Barclay).
- pouzolziae* Syd. (452:443; Sacc. XXI:803; Syd. IV:500). On leaves of *Pouzolzia pentandra*, Nilgiris (Butler).
- punctoidea* Cke (130:75; Sacc. VII:858; Syd. IV:487; 236:270, figs.). On pinnate leaves of a tree belonging to the Leguminosae, Himalaya north of Dehra Dun (Fleming).
- rottboelliae* Diet. (Sacc. XVII:457; Syd. IV:546). On *Rottboellia compressa*, Pusa (Butler). This rust may be *U. ophiuri*, which occurs on a related grass.
- sesbaniae* P. Henn. (Sacc. XXI:791; Syd. IV:484). On leaves of *Sesbania aegyptica*, Manjri, near Poona (Ajrekar).
- sissoo* Syd. & Butler (452:442; Sacc. XXI:791; Syd. IV:477; 453:507). On leaves of *Dalbergia sissoo*, Dehra Dun and Pusa (Butler); Wynaad (McRae); Poona (Kulkarni).
- socotrae* Syd. (Sacc. XVII:448; Syd. IV:474; 452:442). On leaves of *Cassia sophora*, Chittagong (Sen); Ramhati, Bengal (Bannerji). Sydow at first (441:332) considered the Indian rust somewhat different from the type, but later (452) placed it in this species.

- [*Uredo*] *spinulosa* (Cke) Sacc. (Sacc. IX:333; Syd. IV:553; 133:15, fig., as *Trichobasis spinulosa* Cke). On undetermined leaves, Belgaum. Sydow (l. c.) has redescribed the fungus, but the host remains unknown.
- tectonae* Racib. (Sacc. XVI:362; Syd. IV:422; 452:443; 89:48; 388:150 as *Accidium effusum* Niessl). On leaves of *Tectona grandis*, Royal Botanic Garden, Calcutta (Kurz); Mysore, Pusa, Calcutta (Butler); Rangpur (Som; Mitra); Comilla (Inayat); Birbhum (Basu).
- tephrosiae* Rabenh. (Syd. IV:485). On *Tephrosia purpurea*, India. The name only was given by Rabenhorst in *Fungi Europaei* No. 2375, and in Sacc. VII:861. Sydow (443, XIV:257) thinks it possible that it may belong to *Ravenelia mitis* Syd.
- tephrosiicola* P. Henn. (Sacc. XVII:446; Syd. IV:485; 113(20):69). Recorded by McRae on *Tephrosia candida*, India.
- valerianae-wallichii* Diet. (219:303; Sacc. XXI:794; Syd. IV:404; 452:443; 453:508; 35, I:352, as "*Uromyces valerianae* Schum."; 35, III:77; 211:264). On leaves of *Valeriana wallichii*, Simla (Barclay); Kumaon (Inayat); of *V. leschenaultii*, Kumaon (Inayat); Shillong (Butler); of *V. sp.*, Mussoorie (Butler); Shillong (Subramaniam). An *Accidium* on the specimen collected by Barclay, and on some of the later collections, was thought by Sydow (452:443) to be perhaps genetically connected, although Barclay (35, I:354) was quite convinced that there was no relationship between the two forms.
- viaticae* Syd. (453:508, as *U. "viaticae"* owing to a typographical error; Sacc. XXI:789; Syd. IV:441). On leaves of *Vicatia conifolia*, Kumaon (Inayat).
- wedeliae-biflorae* Syd. (Sacc. XXI:796; Syd. IV:400). On leaves of *Wedelia urticifolia*, Palghar, Bombay (Ajrekar).
- Uromyces achrous* Syd. (453:491; Sacc. XXI:549; Syd. II:91, fig.). On leaves and occasionally on branches of *Dalbergia sissoo*, Pusa (Butler).
- agropyri* Barclay (43:212; Sacc. XI:181; Syd. II:317). On *Agropyron* sp., Bashahr, near Simla, 7,000 ft. (Lace).
- aloës* (Cke) P. Magn. (Syd. II:265, fig.; 445:487; 17, figs.; Sacc. XI:227 as *Uredo*). On leaves of *Aloe spicata*, Coimbatore (McRae); of *A. vera*, Talegaon, Poona District (Ajrekar & Tonapy).
- ambiens* Cke (130:75; Sacc. VII:584; Syd. II:152; 236:272, figs.; 43:213; 449:54, revised diagnosis). On leaves of *Buxus* probably *sempervirens*, near Dunooltie above Dehra Dun (Fleming); on leaves of *B. sempervirens*, Bashahr, near Simla, 6,000 ft. (Lace).
- andropogonis-annulati* Syd. & Butler (453:492; Sacc. XXI:592; Syd. II:320, fig.). On leaves of *Andropogon annulatus*, Pusa, Orai, Cawnpore, Kumaon, Dehra Dun, and Samalkota (Butler); Bassein, Bombay (Chibber); Saharanpur (B. Das); Poona (Mitra); Lyallpur (A. Khan).



- [*Uromyces*] *anthyllidis* (Grev.) Schroet. (Sacc. VII:551; Syd. II:64; 453:490 as *U. trigonellae* Pass.; 111:362). On leaves of *Trigonella foenum-graecum*, Poona (Butler).
- apludae* Syd. & Butler (453:493; Sacc. XXI:591; Syd. II:321, fig.). On leaves of *Apluda aristata*, Bassein, Bombay (Butler); Amritsar (Inayat).
- appendiculatus* (Pers.) Link (Sacc. VII:535; Syd. II:120; 452:428; 455:256; 111:260, fig.). On leaves of *Vigna catjang*, Coimbatore (Subramaniam); Myingyan, Burma (Butler); Dacca (Som); Mandalay (Shaw); Pusa (Mitra); Nagpur (Pandit); Poona (Ajrekar); of *V. vexillata*, Dharmasala, Punjab (Mitter); of *Dolichos lablab*, Dauracherra, Sylhet (Butler); Nagpur (Pandit); of *Phaseolus* sp., Anda Tode, Wynaad, (McRae); of *P. mungo*, Samalkota, Madras (Barber); of *P. mungo* var. *radiatus*, Palghat, Madras (Subramaniam); of *P. vulgaris*, Godavari (Sundararaman); Anand, Bombay (Chibber).
- arisaemae* Cke (Syd. II:295). On *Arisaema* sp., Chittagong (Sen).
- behenis* (DC.) Unger (Sacc. VII:559; Syd. II:218; 455:256). On leaves of *Lychnis indica*, Harwan, Kashmir (Butler).
- bidentis* Lagerh. (Sacc. XIV:278; Syd. II:3; 452:428). On leaves of *Bidens pilosa*, Nilgiris (Butler); Wynaad (McRae).
- blainvilleae* Berk. (Sacc. VII:576; Syd. II:4; 455:255). On leaves of *Blainvillea rhomboidea* (*B. latifolia*), Samalkota (Subramaniam).
- chenopodii* (Duby) Schroet. (Sacc. VII:548; Syd. II:233). On *Suaeda fruticosa*, Lahore (Kashyap).
- ciceris-arietini* (Grogg.) Jacz. & Boyer (Sacc. XI:175; Syd. II:84; 111:271, fig.). On leaves of *Cicer arietinum*, Pusa (Butler); Jessore (Arnett); Gokak Farm, Bombay (Kulkarni). Barclay (41) referred a rust of *C. arietinum* doubtfully to *U. pisi*; it was probably *U. ciceris-arietini*.
- comedens* Syd. (Syd. II:37; Sacc. XXI:571). On leaves of *Jasminum pubescens*, Manipur (Watt).
- commeliniae* Cke (Sacc. VII:573; Syd. II:292; 452:429; 452:443 as *Uredo ochracea* Diet., and *Uredo davaoensis* Syd.; Syd. IV:595-596). On leaves of *Commelina bengalensis*, Tellicherry in Malabar, and Bangalore (Butler); of *C. obliqua*, Nilgiris (Butler); of *C.* sp., Darjeeling and Wynaad (McRae); Kanaighat in Sylhet, and Mandalay (Butler); Chittagong (Sen); Chikodi, Bombay (Kulkarni); of *Cyanotis tuberosa*, Yelwal in Mysore, and The Droog, Nilgiris (Butler). Sydow at first considered the uredo stage on *Cyanotis* to be distinct, but later (Monog. IV:596) thought it no more than biologically different.
- decoratus* Syd. (453:491; Sacc. XXI:549; Syd. II:88, fig.; 111:374, figs.). On leaves of *Crotalaria juncea*, Samalkota (Butler); Dacca (Som); Godavari (Sundararaman); Dehra Dun (Kar); Sialkot (Cheema).
- echinulatus* Niessl (388:149; Sacc. VII:577; Syd. II:348; 111:69, fig., as *Uredo*.) On leaves of *Bassia latifolia*, Royal Botanic Garden, Calcutta

(Kurz); Palghar, Bombay (Chibber); Burdwan (Mitra); Pusa (Kar). Sydow (444:139) finds that only the uredo stage is known for this fungus.

- [*Uromyces*] *eragrostidis* Tracy (Sacc. **XI**:182; Syd. **II**:326, fig.; 453:494). On leaves of *Eragrostis cynosuroides*, near Pusa (Butler); Chenab bank, Punjab (Cheema).
- eriochloae* (Syd.) Syd. & Butler (453:492; Sacc. **XXI**:590; Syd. **II**:327, fig.; 452:444 as *Uredo eriochloae* Syd.) On leaves and culms of *Eriochloa polystachya*, Pusa, and Burhogah, Saran district, Bihar (Butler).
- fabae* (Pers.) de Bary (Sacc. **VII**:531, pro parte; Syd. **II**:103; 452:428; 455:255; 392:6; 111:29, 255, figs.). On leaves of *Vicia faba*, Pusa (Butler); Saharanpur and Lyallpur (Mitter); of *Pisum sativum*, Pusa (Butler); Maymyo, Burma (Rhind); of *P. arvense*, Pusa and Maymyo (Butler); of *Lathyrus sphaericus*, Pusa and Kumaon (Butler); on leaves and stems of *Lens esculenta*, Cawnpore (Hayman); Pusa (Butler). It may have been *U. fabae* which Barclay (41) saw, and referred to as "*U. pisi* on *Lathyrus sativus*".
- floscopae* (P. Hem.) Syd. (Sacc. **XXIII**:637; Syd. **IV**:596; 453:509 as *Uredo assamensis* Syd.). On leaves of *Floscopa scandens*, Kanaighat, Sylhet (Butler).
- geranii* (DC.) Othl & Wartm. (Sacc. **VII**:535; Syd. **II**:190; 455:256). On leaves of *Geranium wallichianum*, Harwan, Kashmir (Butler).
- heterogeneous* Cke (132:115 as *U. "heterogenis"* Cke, with fig. as *U. "heterogenum"*; Sacc. **VII**:583; Syd. **II**:59). On leaves of *Hibiscus* sp., Kolapore, Bombay (Hobson).
- hobsoni* Vize (132:115, fig.; Sacc. **VII**:583; Syd. **II**:38; 319, I:115; 452:429; 111:103, fig.; 35, **III**:76, figs., and 46:150, figs., as *U. cunninghamianus* Barclay). On stems of *Jasminum* sp., Kolapore, Bombay (Hobson); Kashmir (Butler); of *J. grandiflorum*, Sairi, near Simla (Barclay); Kumaon (Inayat); Mysore (Butler); Poona; Dehra Dun; of *J. arborescens*, Pusa (Ghosh); of *J. officinale*, Kangra District, Punjab (Mitter); of *J. malabaricum*, Mysore (Butler). Ajrekar (11) perhaps had this rust from Matheran (see *Blastospora butleri* Syd.).
- inayati* Syd. (453:493; Sacc. **XXI**:590; Syd. **II**:321, fig.). On leaves of *Aphuda aristata*, Kumaon (Inayat); Mussoorie (Butler); Wynaad (McRae); of *A. variu*, Kumaon (Inayat).
- indicus* Patouill. (360:81, fig.; Sacc. **VII**:558; Syd. **II**:307, fig.). On leaves of *Scirpus affinis*, India (Jacquemont). There is a good specimen of this rust at Paris. It was presumably found by Patouillard amongst the collections made by Jacquemont at an early date.
- leptodermus* Syd. (452:430; Sacc. **XXI**:593; Syd. **II**:334; 453:493; 452:444 as *Uredo isachnes* Syd.; 452:444 as *Uredo panici-prostrati* Syd.). On leaves of *Panicum javanicum*, Dehra Dun, Pusa, Dohad Farm in Bombay, and Hoshangabad (Butler); Wynaad (McRae); of *P. isachnes*, Phulgaon, Deccan (Watt); Samalkota (Hafiz Khan); Nagpur (Pandit); Ganeshkhind Botanic

- Garden, Poona (Gammie); Poona (Butler); of *P. prostratum*, Nilgiris and Pusa (Butler); Darjeeling (McRae).
- [*Uromyces*] *lespedezae-procumbentis* (Schw.) Lagerh. (Syd. II:108; 455:255; Sacc. VII: 549). On leaves of *Lespedeza bicolor*, Harwan, Kashmir (Butler).
- linearis* Berk. & Broome (Sacc. VII:575; Syd. II:336, fig.; 453:493; 455:256; 111:233, fig.). On leaves of *Panicum miliare*, Poona (Gammie); of *P. repens*, Poona, Pusa, Mandalay, Coimbatore, and Mysore (Butler); Ranchi (Mitra).
- mac-intirianus* Barclay (35, III:79; Sacc. IX:293; Syd. II:25, fig.; 452:429). On leaves of *Hemigraphis lutebrosa*, Simla (Barclay); Parasnath, Bihar (Watt).
- mimusops* Cke (Sacc. VII:579; Syd. II:39; 445:487). On leaves of *Mimusops elengi*, South Kanara (McRae); Bombay (Ajrekar).
- mucunae* Rabenh. (387:62; Sacc. VII:568; Syd. II:117; 455:255; 111:268, figs.). On leaves of *Mucuna ? pruriens*, Royal Botanic Garden, Calcutta (Kurz); on *M. (Stizolobium) deeringiana*, Pusa (Butler); Nagpur (Shrivastan); of *M. sp.*, Maymyo and Dehra Dun (Butler); Wynaad (McRae); Poona.
- mussooriensis* Syd. (452:430; Sacc. XXI:589; Syd. II:342, fig.). On leaves of *Stipa sibirica*, Mussoorie (Butler).
- orientalis* Syd. (453:490; Sacc. XXI:547; Syd. II:102, fig.; 455:255). On leaves and stems of *Indigofera tinifolia*, Pusa and Hoshangabad (Butler); Gujrat, Punjab (Cheema); of *I. cordifolia*, Poona (Butler); on leaves of *I. glandulosa*, Poona (Kulkarni); Hoshangabad (Butler).
- polygoni* (Pers.) Fekl (Sacc. VII:533; Syd. II:236; 455:256). On leaves of *Polygonum aviculare*, Harwan, Kashmir (Inayat).
- ?proëminens* (DC.) Lév. (Sacc. VII:553, pro parte; Syd. II:158; 452:429 as *U. euphorbiae* Cke & Peck). On *Euphorbia* sp., Dharwar (Burkill); Nagpur (Pandit). The identity of this rust remains uncertain. Sydow does not include India for any of the twenty-seven species of *Uromyces* listed upon *Euphorbia*. Barclay's record (43:213) of *U. ? pulvinatus* Kalch. & Cke, on leaves of *Euphorbia hypericifolia* var. *indica*, Bashahr, near Simla, 6,000 ft. (Lace), was considered doubtful by Barclay himself. *U. pulvinatus* is now considered a synonym of *U. proëminens*, and *Euphorbia hypericifolia* L. is listed by Arthur (20:259) as a host of *U. proëminens* in North America.
- rottboelliae* Arth. (19:229; Sacc. XVII:262; Syd. II:338; 452:430). On leaves of *Rottboellia speciosa*, Jaunsar, 7,000 ft., (Duthie); Simla and Kashmir (Butler).
- ?scirpi* (Cast.) Burr. (Sacc. VII:558; Syd. II:302). A doubtful specimen on *Scirpus* sp., Lahore (Das).
- schoenanthi* Syd. (452:429; Sacc. XXI:588; Syd. II:319). On leaves of *Andropogon schoenanthus*, Poona and Dharwar (Butler); Wynaad (McRae).
- setariae-italicae* (Diet.) Yoshino (Syd. II:339, fig.; 452:444 as *Uredo setariae italicae* Diet.; Sacc. XVII:448; 111:223, fig.). On leaves of *Setaria italica*, Poona and Pusa (Butler); Godavari (Mitra); Wynaad (McRae); of *S. inter*

- media*, Poona (Butler); of *S. verticillata*, Poona (Butler); Jahu, Darbhanga District (Taslim); of *S. glauca*, Poona, Dehra Dun, Mysore, Hoshangabad, Saharanpur, and Pusa (Butler); Darjeeling (McRae).
- [*Uromyces sojae* (P. Henn.) Syd. (Sacc. **XXI**:539; Syd. **II**:128; 452:429). The rust reported to be on *Glycine soja*, Poona, from which the combination *Uromyces sojae* was made, proves to be upon *Mucuna*, and the fungus is *U. mucunae* Rabenh. No rust on *Glycine soja* has in reality been found in India.]
- solidaginis* (Sommerf.) Niessl (Sacc. **VII**:566; Syd. **II**:10; **35**, **III**:77; 211:269). On leaves of *Solidago virgaurea*, Simla (Barclay).
- sphaerophleus* Cke (132:115, fig.; Sacc. **VII**:582; Syd. **II**:359; 210:23, fig.). On leaves, apparently of *Ononis*, Kolapore, Bombay (Hobson).
- striatus* Schroet. (Sacc. **VII**:542; Syd. **II**:115; 452:428; 89:45). On leaves of *Medicago sativa*, Poona, and Hissar, Punjab (Butler); Pusa (Shaw); Julundur (Sahai); of *M. denticulata*, Hoshiarpur, Punjab (Hafiz Khan).
- strobilanthis* Barclay (**35**, **III**:78; Sacc. **XXI**:564; Syd. **II**:26). On leaves of *Strobilanthes dalhousianus*, Simla (Barclay).
- supertius* Syd. (Syd. **II**:337, fig.; Sacc. **XXI**:593; 452:430 as "*U. linearis* B. & Br. "). On leaves of *Panicum antidotale*, Dehra Dun (Butler).
- trifolii* (Hedw. f.) Lév. (Sacc. **VII**:534, pro parte; Syd. **II**:132; 455:256). On leaves of *Trifolium pratense*, Harwan, Kashmir (Butler); of *T. resupinatum*, Peshawar (Shaw).
- vestergreni* Syd. (Syd. **II**:74; Sacc. **XXI**:354; 452:429 as *U. verruculosus* B. & Br. (non Schroet.)). On leaves of *Bauhinia tomentosa*, Yelwal, Mysore (Butler); of *B. acuminata*, Palghat, Madras (Subramaniam).
- vignae* Barclay (43:211, fig.; Sacc. **XXI**:540; Syd. **II**:124). On leaves of *Vigna vexillata*, Tara Devi, near Simla (Barclay).
- vossiae* Barclay (**35**, **III**:76, fig.; Sacc. **IX**:295; Syd. **II**:344). On leaves of *Vossia speciosa*, Simla (Barclay).

## HYMENOMYCETES.

- varicus burkillii* (Masse) Sacc. & Trott. (Sacc. **XXIII**:302; 319, **VI**:122 as *Psalliota burkillii* Mass.). On the ground under a wall, Calcutta (Burkill).
- campester* L. (Sacc. **V**:997; 260:153 as *Psalliota campestris* Fr.; 520; 74; 324:197, figs.). On the ground, Pengi, North-western Himalaya (Marten); Pusa (McRae).
- comosus* (P. Henn.) Sacc. & D. Sacc. (Sacc. **XVII**:84; 263:331 as *Psalliota comosa* P. Henn.). On the ground, Botanic Garden, Saharanpur (Gollan).
- ?cretaceus* Fr. (Sacc. **V**:995; 263:330 as *Psalliota* cfr. *cretacea* Fr.). On the ground, Botanic Garden, Saharanpur (Gollan).
- exaltatus* Berk. (57, No. 291; Sacc. **V**:993). On clay and earthy banks, Darjeeling, 7,000 ft. (Hooker f.).

- [*Agaricus*] ?*elvensis* (Berk. & Broome) Sacc. (Sacc. V:993 ; 263:330 as *Psalliota* cfr. *elvensis* Berk. & Br.). On the ground, Botanic Garden, Saharanpur (Gollan).
- fulviceps* Berk. (57, No. 403 ; Sacc. V:1010 as *A. "fulvipes* Berk." misprint for *A. fulviceps*). On the ground, Sikkim (Hooker f.).
- latipes* Berk. (57, No. 383 ; Sacc. V:1000). On the ground, Nunklow, Khasi Hills, 4,000 ft. (Hooker f.).
- rimosus* (P. Henn.) Sacc. & D. Sacc. (Sacc. XVII:83 ; 263:331 as *Psalliota rimosa* P. Henn.). On the ground, Botanic Garden, Saharanpur (Gollan).
- squalidus* Massee (319, XIV:255 ; Sacc. XXIII:300). Calcutta (Burkill).
- silvaticus* Schaef. (Sacc. V:1000 ; 57, after No. 291). On earth, Darjeeling, 7,500 ft. (Hooker f.).
- woodrowii* Massee (319, III:151 ; Sacc. XVII:83 ; 524:363, fig.). On the ground, Poona (Woodrow).
- Aleurodiscus acerinus* (Pers.) v. Hoehn. & Lits. (Sacc. VI:587 as *Stereum accrinum* Pers.). Reported on dead wood, India.
- Amanita caesarea* Scopoli (Sacc. V:8 ; 57, after No. 360, as *Agaricus caesarius* Scop.). Khasi Hills (Hooker f.).
- Amanitopsis berkeleyi* (Hooker f.) Sacc. (Sacc. V:24 ; 57, No. 243 as *Agaricus (Amanita) berkeleyi* Hooker f.). On the ground, Darjeeling, 7,500 ft. (Hooker f.).
- eriophora* (Berk.) Sacc. (Sacc. V:26 ; 57, No. 242 as *Agaricus (Amanita) erio-phorus* Berk.). On the ground, Darjeeling, 7,500 ft. (Hooker f.). Berkeley remarks that the stem, though bulbous, exhibits no trace of a volva.
- fritillaria* (Berk.) Sacc. (Sacc. V:26 ; 57, No. 261 as *Agaricus (Amanita) fritillarius* Berk.). Khasi Hills (Hooker f.). Saccardo placed this in *Amanitopsis*, although Berkeley describes a broad ring, and mentions no volva, but states that the stem is bulbous at the base.
- regalis* (Berk.) Sacc. (Sacc. V:25 ; 57, No. 241 as *Agaricus (Amanita) regalis* Berk.). On the ground, Jalapahar, Darjeeling, 7,500 ft. (Hooker f.).
- vaginata* (Bull.) Roze (Sacc. V:21 ; 57, after No. 360, as *Agaricus vaginatus* Bull.). Below Nunklow, Khasi Hills, 4,000 ft. (Hooker f.).
- Annularia burkillae* Massee (319, XIV:255 ; Sacc. XXIII:181 as *A. burkilli* Mass.). At the roots of trees, Maidan, Calcutta (Burkill).
- Anthracophyllum nigrita* (Lév.) Kalkbbr.\* (Sacc. V:1139 ; 57, No. 408 as *Xerotus lobatus* Berk. ; 84:222). On dead wood, Khasi Hills (Hooker f.). Petch (367, IV:153) states that *A. nigrita* is a *Panus* identical with *P. melanophyllum* Fr. See also *X. lateritius*.
- Armillaria adelpha* Berk. (57, No. 251 ; Sacc. V:84). On dead wood, Darjeeling, 7,000-8,000 ft. (Hooker f.).
- dichupella* Berk. (57, No. 247 ; Sacc. V:83). On dead wood, Darjeeling, 7,500 ft. (Hooker f.).

- [*Armillaria*] *duplicata* Berk. (57, No. 248; Sacc. V:83). On dead wood, Darjeeling, 7,500 ft. (Hooker f.).
- horrens* Berk. (57, No. 245; Sacc. V:82). On bark of old trees, etc., Darjeeling, 7,500 ft. (Hooker f.).
- mellea* (Vahl) Quél. (Sacc. V:80; 266:437). On *Picea morinda*, Deoban, Jaunsar, United Provinces (Hole). See also p. xiv above.
- multicolor* Berk. (57, No. 249; Sacc. V:84). On dead wood, Jalapahar, Darjeeling, 7,500 ft. (Hooker f.).
- omnituens* Berk. (57, No. 250; Sacc. V:84). On dead wood, Darjeeling, 8,500 ft. (Hooker f.).
- rhizopoda* Cke (162:89; Sacc. V:79). On clay banks, mostly attached to roots of grass, sedges, etc., Afghanistan boundary (Aitcheson).
- vara* Berk. (57, No. 246; Sacc. V:83). On rotten timbers, Sinchul, Himalaya, 8,600 ft. (Hooker f.).
- Auricularia epitricha* Berk. in Herb. (179:15; Sacc. XI:143; *A. carteri* Berk. [MS?]). On bark, Bombay; Nilgiris.
- mesenterica* Fr. (Sacc. VI:762; 467:154; 288, No. 60:6). On dead wood, Bandra, Khandala, Bombay (Blatter); India (P. D. Master).
- rugosissima* (Lév.) Bres. (84:231; 57, No. 345, as *Phlebia reflexa* Berk.; Sacc. VI:500; 288, No. 46:7; 287:1263 as "*Auricula reflexa*"; 319, IV:94 as *Auricularia butleri* Massee). On wood, Great Runjeet River, 7,000 ft., and Tonglo, Sikkim, 10,000 ft. (Hooker f.); Dehra Dun (Butler); India (Bose).
- vespertilis* Fr. subspecies *venulosa* Fr. (240:113; Sacc. VI:764). On trunks, Sikkim.
- Bolbitius grandiusculus* Cke & Massee (Sacc. IX:143; 319, III:151). On the ground, Poona (Woodrow).
- Boletus areolatus* Berk. (57, No. 396; Sacc. VI:44; 57, after No. 414). In open pastures, Kala Pani, Khasi Hills, 5,500 ft. (Hooker f.).
- delphinus* Berk. (57, No. 331; Sacc. VI:28). On exposed ground, Darjeeling, 7,500 ft. (Hooker f.). A specimen was also sent to Montagne, and is now in Paris.
- emodensis* Berk. (57, No. 329; Sacc. VI:20). On the ground, Darjeeling, 7,500 ft. (Hooker f.). A specimen was sent to Montagne. Berkeley gives a figure reference, but as he explains after No. 360, this was not published "but will appear in Sir W. J. Hooker's 'Icones'". Saccardo (l. c.) lists "Hook. tab. DCCCLXX", and occasionally refers to figures with other species collected by Hooker and described by Berkeley. These drawings were not published, but are filed at Kew.
- flavipes* Berk. (57, No. 412; Sacc. VI:28). On the ground, Myrong, Khasi Hills (Hooker f.).
- fragicolor* Berk. (57, No. 394; Sacc. VI:19). Khasi Hills (Hooker f.).

- [*Boletus*] *furfurasceus* Berk. (57, No. 392, and after No. 411; Sacc. VI:28). On clay banks, Moflong, Khasi Hills, 5,500 ft. (Hooker f.).
- *gigas* Berk. (57, No. 395; Sacc. VI:33). In copses of *Andromeda* and birch, Lachen River, Sikkim, 1,200 [12,000] ft. (Hooker f.).
- *pusillus* Berk. (57, No. 413; Sacc. VI:46). On the ground, Moflong, Khasi Hills (Hooker f.).
- *scrobiculatus* Berk. (57, No. 397, and after No. 414; Sacc. VI:37). On soil in open places, Moflong, Khasi Hills (Hooker f.).
- *squamatus* Berk. (57, No. 393, and after No. 414; Sacc. VI:18). In woods, Myrong, Khasi Hills, 6,000 ft. (Hooker f.).
- *ustalis* Berk. (57, No. 330; Sacc. VI:20). On rotten tree trunks, Darjeeling, 7,500 ft. (Hooker f.).
- *verrucarius* Berk. (57, No. 414; Sacc. VI:33). On the ground, Sikkim (Hooker f.).
- Calocera dilatata* Mont. (351, No. 602; Sacc. VI:733; 350:152 as *Clavaria dilatata* Mont.). On the ground, edge of hill forest, Madura (Bélanger). Montagne notes: "An *C. hostmanni* Lév. eadem?" Specimen not found in Herb. Montagne.
- *sphaerobasis* Berk. (57, No. 347; Sacc. VI:737). On the ground, apparently springing from a twig, Darjeeling, 7,500 ft. (Hooker f.).
- *viscosa* (Pers.) Fr. (Sacc. VI:732; 196:127; 144:96). Belgaum (Hobson); Sibpur (Kurz).
- Cantharellus cibarius* Fr. (Sacc. V:482; 263:328; 288, No. 65:4). India (Kashyap); on the ground under *Pinus longifolia*, Arnigadh, Mussoorie (Gollan).
- ? *congregatus* Mont. (not *C. congregatus* (Pat.) Sacc. & Syd., Sacc. XIV:100) (349:21; 351, No. 421). On dead trunks and wood, Ootacamund (Perrottet?). A specimen, in poor condition, is in Herb. Montagne in Paris. Montagne himself was uncertain about the species. The name *C. congregatus* Mont. was not published in Saccardo's Sylloge.
- *infundibuliformis* Fr. (Sacc. V:490; 57, after No. 389). On the ground, Myrong, Khasi Hills (Hooker f.).
- Cladoderis dendritica* Pers. (Sacc. VI:549; 57, after No. 450, as *Thelephora dendritica* Pers.). On rotten wood, Nunklow, Khasi Hills (Hooker f.).
- *mussooriensis* (P. Henn.) Sacc. (Sacc. XVII:163; 263:324 as *Lachnocladium mussooriense* P. Henn.). On the ground, Arnigadh, Mussoorie (Gollan). Bresadola (84:60) states that this is a *Stereum* near *S. junghuhnii* Fr. Lloyd (298:11) also gives notes on the hymenium and spores, and finds it to be a *Stereum*.
- Clavaria botrytis* Pers. var. *concolor* Berk. (57, after No. 399). Khasi Hills (Hooker f.).
- *corniculata* Schaef. (Sacc. VI:694; 352 as "*Calocera corniculata*"). Sonamarg, Kashmir (R. R. Stewart).

- Clavaria*] *formosa* Pers. (Sacc. VI:699; 57, after No. 399). Khasi Hills (Hooker f.).
- fusiformis* Sowerby (Sacc. VI:718; 287:955). India (Cave).
- gollani* P. Henn. (260:151; Sacc. XVI:208). On the ground, Saharanpur (Gollan).
- jacquemontii* Lév. (284:179, fig.; 285:214; Sacc. VI:698). On the ground, Kashmir (Jacquemont). The type specimen at Paris is a finely-branched fungus, still in good condition.
- militina* Berk. (57, No. 400; Sacc. VI:727). On rotten timber in wet woods, Kala Pani, Khasi Hills, 5,000 ft. (Hooker f.).
- pyxidata* Pers. (Sacc. VI:698; 263:324; 288, No. 44:4). On wood, Arnigadh, Mussoorie (Gollan); India (Legere).
- stricta* Pers. (Sacc. VI:705; 57, after No. 399). Khasi Hills (Hooker f.).
- Hitocybe* *incongrua* Berk. (57, No. 253; Sacc. V:195). On the ground, Jallapahar, Darjeeling, 7,500 ft. (Hooker f.).
- laccata* (Scop.) Sacc. (Sacc. V:197; 263:335; 57, after No. 363, as *Agaricus laccatus* Scop.). On the ground, Arnigadh, Mussoorie, 5,500 ft. (Gollan); in pine woods, Sikkim, 11,000 ft. (Hooker f.).
- pumila* Massee (319, XIV:254; Sacc. XXIII:62). About ants' nests under a wall, Calcutta (Burkill).
- ollybia* *albuminosa* (Berk.) Patch (367, III:268, with synonymy; 248:15 as *Armillaria eurhiza* Berk.; Sacc. V:85; 71:349, fig.; 74:613 as *Lepiota albuminosa* Berk.). This species grows from termites' nests, and is discussed by Bose (78). Edible, and known in Bengal as "Patal Kour" (Bose). Occurs also in Central Provinces and Berar, with several vernacular names (Graham).
- ambusta* Fr. (Sacc. V:247; 70, I:112). On burnt ground, Calcutta (Bose).
- antitypa* Berk. (57, No. 263; Sacc. V:230). On mossy trunks, Darjeeling, 8,500 ft. (Hooker f.).
- blandula* Berk. (57, No. 364; Sacc. V:219). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- camptopoda* Berk. (57, No. 264; Sacc. V:231). On wood, Darjeeling, 7,500 ft. (Hooker f.).
- dryophila* (Bull.) Fr. var. *caespitis* Berk. (57, No. 365; Sacc. V:234). Amongst grass and moss, Lachen, Himalaya, 14-16,000 ft. (Hooker f.).
- lutea* Massee (319, VI:122; Sacc. XXIII:77). On a wall, Calcutta (Burkill).
- longipes* (Bull.) Berk. (Sacc. V:202; 57, after No. 401). Khasi Hills (Hooker f.).
- macra* Berk. (57, No. 366; Sacc. V:236). On the ground in pine woods, Sikkim, 11,000 ft. (Hooker f.).
- maculata* (Alb. & Schw.) Fr. (Sacc. V:207; 57, after No. 363). In pine woods, on *Picea morinda* (*Abies smithiana*), Lachen, Himalaya, 9,000 ft. (Hooker f.).
- mimica* W. G. Sm. (Sacc. V:214; 70, I:112). In grassy fields, Calcutta (Bose).
- napipes* Hook. f. in Berk. (57, No. 254; Sacc. V:201 as *C. napipes* Berk.). On the ground, Darjeeling, 7,500 ft. (Hooker f.).



- [*Collybia*] *papaveracea* Berk. (57, No. 259; Sacc. V:225). On dead sticks in moss, Darjeeling, 7,500 ft. (Hooker f.).
- *podagrosa* Berk. (57, No. 260; Sacc. V:211). On clay banks, Sinchul, Himalaya, 8,000 ft. (Hooker f.).
- *radicata* (Rehl.) Berk. var. *superbiens* Berk. in litt. (Sacc. V:201). Recorded by Saccardo as a common form in the Khasi Hills.
- *raphanipes* Berk. (57, No. 255; Sacc. V:202). On the ground, Jallapahar, Darjeeling, 7,000 ft. (Hooker f.).
- *rhodella* Berk. (57, No. 262; Sacc. V:236). On wood, Darjeeling, 7,500 ft. (Hooker f.). Not *C. rhodella* Pat., Sacc. V:233, XIV:81.
- *rupicola* Massee (319, I:114; Sacc. XVI:25). Amongst rocks, Tehri Garhwal, Himalaya, 7,500 ft. (Gamble).
- *stillaticia* Berk. (57, No. 256; Sacc. V:231). On dead and living tree trunks, Jallapahar, Darjeeling, 8,000 ft. (Hooker f.).
- *stipitaria* Fr. (Sacc. V:216; 260:153; 263:335; 467:158). On grass stems and roots, Botanic Garden, Saharanpur (Gollan); on wood, Simla (Blatter).
- *triplicata* Berk. (57, No. 258; Sacc. V:221). Habitat and exact locality not given, Sikkim (Hooker f.).
- *undabunda* Berk. (57, No. 257; Sacc. V:201). On old timber in woods, Darjeeling, 7,500 ft. (Hooker f.).
- *ustipes* Berk. (57, No. 261; Sacc. V:234). On the ground, Darjeeling, 8,000 ft. (Hooker f.).
- *velutipes* (Curt.) Fr. (Sacc. V:212; 57, after Nos. 260 and 363, as *Agaricus velutipes* Curt.). On dead wood, Darjeeling, 7-8,000 ft., and in pine woods, Sikkim, 11,000 ft. (Hooker f.).
- Coniophora indica* Massee (313:134; Sacc. IX:241). On wood, Bombay.
- *membranacea* DC. (Sacc. VI:649; 144:93). On walls of gaol, Simla (Prof. Balfour).
- Coprinus comatus* Fr. (Sacc. V:1079; 57, after No. 311). Bombay (J. D. Campbell); on grassy earth, Darjeeling (Hooker f.).
- *finbriatus* Berk. & Broome (Sacc. V:1105; 71:352, fig.). Usually on dung, Howrah and Hooghly Districts, Bengal (Bose).
- *hookeri* Berk. (57, No. 312; not in Sacc.). In grassy places, Jallapahar, 7,500 ft. (Hooker f.).
- *niveus* Fr. (Sacc. V:1088; 70, I and II, figs.). On dung and heaps of rotten straw, common in Bengal (Bose).
- ? *spraguei* Berk. & Curt. (Sacc. V:1101; 263:329). On the ground, Botanic Garden, Saharanpur (Gollan).
- *vellereus* Berk. (57, No. 313; not in Sacc.). On dead wood and earth, Darjeeling (Hooker f.).

- Corticium coeruleum** Fr. (Sacc. VI :614; 319, I :114; 467 :151; 379 :287).  
Khandala, Bombay (Blatter); on old dry wood (phosphorescent), Dehra Dun (Gamble).
- dealbans** Tunstall (504 :51, without formal description). India, "found in all districts" on bark of *Thea sinensis* (Tunstall).
- incarnatum** (Pers.) Fr. (Sacc. VI :625; 263 :323). On dead twigs, Arnigadh, Mussoorie (Gollan).
- invisum** Petch (373, III :316; 500:257; 498:53, figs.; 504:48; 494:121 as *Hypochnus theae* Bernard). The cause of the black rot of *Thea sinensis* in India, at first identified as *Hypochnus theae* Bernard, is now recognised to be *C. invisum*. Tunstall (498 :55; see also 500 and 504) notes, however, that there is another *Corticium* on tea which may be Bernard's species.
- koleroga** (Cke) v. Hoehn. (264, No. 468; 111:477, figs.; 487:702; 126, figs.; 517, figs.; 134:2, figs., as *Pellicularia koleroga* Cke; Sacc. IV:149; 136; 135, figs.). On twigs and leaves of *Coffea* spp., South India; on *Gardenia gummi-fera*, *Plectronia* (*Canthium*) *parviflora*, *Lawsonia alba*, *Dendrocalamus* sp., *Jasminum* sp., *Pleopeltis linearis*, and *Niphobolus fissus*, Mysore (Venkatara-yan).
- leve** Pers (Sacc. VI :611; 57, after No. 453). On decayed wood, Nangki, E. Nepal, 10,000 ft. (Hooker f.).
- levigatum** Fr. (Sacc. VI :628; 196:127). Yomah, Burma (Kurz).
- repens** Berk. (63 :811; not in Sacc.; 377:1). The common fungus on tea and other plants in north-eastern India, known as "thread blight", was thus described by Berkeley in 1873: "*Corticium repens* B. Hypothallo filiformi repente albo, hymenio pallide rufo. Spreading widely over living shrubs, on which it forms white linear creeping threads, which run off from the bark to the leaves; hymenium of a very pale rufous colour. At present it has not been observed apparently in its most perfect state....." He reported that it occurred in India on tea and chestnuts, collected by Mr. Grote. In a later paper (64) Berkeley did not mention the name *C. repens*, and no one since has succeeded in assigning the fungus to a definite position, although it is recognised to be like a *Corticium* (111:456, figs.; discussed by Petch, 377)."
- salmonicolor** Berk. & Broome (Sacc. VI :620; 367, III:278; 379 :281; 111 :102, 500, figs.; 498:57; 392:5; 394:9; 344; 500; 113(21):59; 347). On living stems of *Hevea*, *Thea*, *Coffea*, and other plants in Assam, South India, Burma, and the Andaman Islands; on *Cinchona ledgeriana*, Mungpoo and Munsong (McRae); on *Citrus aurantium*, Assam (S. K. Mitra).
- solani** Bourdot & Galzin (113(19):459; 111:21, 263, figs., as *Hypochnus solani* Prill. & Del.; Sacc. XXI:414; 409:139, figs., as *C. vagum* Berk. & Curt.; 413; 392:2 as *Rhizoctonia solani* Kuehn; 393 :2; 113(17):55). On living *Arachis hypogaea*, *Solanum tuberosum*, *Lycopersicum esculentum*, *Vigna catjang*,

- Trichosanthes cucumerina*, *Piper belle*, *Trifolium alexandrinum*, *Sesamum indicum*, and other plants in northern and western India, and in Burma.
- [*Corticium*] *violaceo-lividum* (Sommerf.) Fr. (Sacc. VI :627 ; 196 :127). Yomah, Burma (Kurz).
- Cortinarius emodensis* Berk. (57, No. 384 ; Sacc. IX :121 and XI :65). In pine woods, on *Abies webbiana*, Lachen, Himalaya, 10,000 ft. (Hooker f.).
- *flammeus* Berk. (57, No. 386 ; Sacc. IX :127 and XI :66). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *saniosus* Fr. (Sacc. V :980 ; 57, after No. 386). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *vinosulus* Sacc. (Sacc. IX :121 as "*C. vinosulus* Berk."; 57, No. 385 as *C. vinosus* Berk.; not *C. vinosum* Cke). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *violaceus* Fr. (Sacc. V :924 ; 57, after No. 385). In woods, Myrong, Khasi Hills (Hooker f.).
- Crepidotus alveolus* (Lasch) Fr. (Sacc. V :877 ; 263 :331). On the ground, Botanic Garden, Saharanpur (Gollan).
- *applanatus* (Pers.) Fr. (Sacc. V :878 ; 263 :331). On dead branches, Arnigadh, Mussoorie (Gollan).
- Cyclomyces turbinatus* Berk. (57, No. 445 ; Sacc. VI :390). On decayed wood, Nunklow, Khasi Hills (Hooker f.).
- Daedalea andamani* Berk. in Herb. (174 :93 ; Sacc. XI :100). On trunks, Andaman Islands.
- *boseii* Lloyd (287 :1069, 1109, fig.; 70, VII :32). On dead branches of *Mangifera indica*, Bengal (Bose).
- *discolor* Fr. (Sacc. VI :383 ; 196 :125). Yomah, Burma (Kurz).
- *emodensis* Berk. (57, No. 444 ; Sacc. VI :374). On dead wood, Lebong, Darjeeling (Hooker f.).
- *flavida* Lév. (Sacc. VI :381 ; 70, V :24, figs.; 287 :1010 ; 70, VII :33 as *D. microzona* Lév. = form of *D. flavida* Lév.; 288, No. 60 :6 as "*Trametes flavida*"; 287 :1069). India (P. D. Master); on logs and bamboos, Calcutta (Bose); the form *microzona*, which is stated to have more regular pores and a thinner substance, Sunkna, Darjeeling (Bose). Lloyd (288, No. 36 :3) suggested that *D. flavida* is the same as *Lenzites ochroleuca* Lév. but he continued to use the former name also. See "*Lenzites flavida*."
- *gollanii* Massee (319, VIII :217 ; Sacc. XXIII :450). On dead wood, Mussoorie (Gollan).
- *hobsoni* Berk. (Sacc. VI :379 ; 70, II :143, figs.). Bengal (Bose). Perennial.
- *latissima* Fr. (Sacc. VI :383 ; 274 :482 ; 51 :382). Recorded from India (Wight), possibly in error for *D. sinulosa*.
- *pruinosa* Lév. (Sacc. VI :379 ; 84 :231 ; 286 :145 as *Sistotrema ochroleucum* Lév.; 288, No. 28 :2 ; 286 :143 as *Hexagonia glabra* Lév.; 57, No. 409 as

- Corticium coeruleum** Fr. (Sacc. VI :614; 319, I :114; 467 :154; 379 :287).  
Khandala, Bonibay (Blatter); on old dry wood (phosphorescent), Dohra Dun (Gamble).
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- incarnatum** (Pers.) Fr. (Sacc. VI :625; 263 :323). On dead twigs, Arnigadh, Mussoorie (Gollan).
- invisum** Petch (373, III :316; 500:257; 498:53, figs.; 504:48; 494:121 as *Hypochnus theae* Bernard). The cause of the black rot of *Thea sinensis* in India, at first identified as *Hypochnus theae* Bernard, is now recognised to be *C. invisum*. Tunstall (498 :55; see also 500 and 504) notes, however, that there is another *Corticium* on tea which may be Bernard's species.
- koleroga** (Cke) v. Hoehn. (264, No. 468; 111:477, figs.; 487:702; 126, figs.; 517, figs.; 134:2, figs., as *Pellicularia koleroga* Cke; Sacc. IV:149; 136; 135, figs.). On twigs and leaves of *Coffea* spp., South India; on *Gardenia gummi-fera*, *Plectronia (Canthium) parviflora*, *Lawsonia alba*, *Dendrocalamus* sp., *Jasminum* sp., *Pleopeltis linearis*, and *Niphobolus fissus*, Mysore (Venkatara-yan).
- leve** Pers (Sacc. VI :611; 57, after No. 453). On decayed wood, Nangki, E. Nepal, 10,000 ft. (Hooker f.).
- levigatum** Fr. (Sacc. VI :628; 196:127). Yomah, Burma (Kurz).
- repens** Berk. (63 :811; not in Sacc.; 377:1). The common fungus on tea and other plants in north-eastern India, known as "thread blight", was thus described by Berkeley in 1873: "*Corticium repens* B. Hypothallo filiformi repente albo, hymenio pallide rufo. Spreading widely over living shrubs, on which it forms white linear creeping threads, which run off from the bark to the leaves; hymenium of a very pale rufous colour. At present it has not been observed apparently in its most perfect state....." He reported that it occurred in India on tea and chestnuts, collected by Mr. Grote. In a later paper (64) Berkeley did not mention the name *C. repens*, and no one since has succeeded in assigning the fungus to a definite position, although it is recognised to be like a *Corticium* (111:456, figs.; discussed by Petch, 377)."
- salmonicolor** Berk. & Broome (Sacc. VI :620; 367, III:278; 379 :281; 111 :102, 500, figs.; 498:57; 392:5; 394:9; 344; 500; 113(21):59; 347). On living stems of *Hevea*, *Thea*, *Coffea*, and other plants in Assam, South India, Burma, and the Andaman Islands; on *Cinchona ledgeriana*, Mungpoo and Munsong (McRae); on *Citrus aurantium*, Assam (S. K. Mitra).
- solani** Bourdot & Galzin (113(19):459; 111:21, 263, figs., as *Hypochnus solani* Prill. & Del.; Sacc. XXI:414; 409:139, figs., as *C. vagum* Berk. & Curt.; 413; 392:2 as *Rhizoctonia solani* Kuehn; 393 :2; 113(17):55). On living *Arachis hypogaea*, *Solanum tuberosum*, *Lycopersicum esculentum*, *Vigna catjang*,

*Trichosanthes cucumerina*, *Piper betle*, *Trifolium alexandrinum*, *Sesamum indicum*, and other plants in northern and western India, and in Burma.

[*Corticium*] *violaceo-lividum* (Sommerf.) Fr. (Sacc. VI :627 ; 196 :127). Yomah, Burma (Kurz).

*Cortinarius emodensis* Berk. (57, No. 384 ; Sacc. IX :121 and XI :65). In pine woods, on *Abies webbiiana*, Lachen, Himalaya, 10,000 ft. (Hooker f.).

— *flammeus* Berk. (57, No. 386 ; Sacc. IX :127 and XI :66). In pine woods, Sikkim, 11,000 ft. (Hooker f.).

— *saniosus* Fr. (Sacc. V :980 ; 57, after No. 386). In pine woods, Sikkim, 11,000 ft. (Hooker f.).

— *vinosulus* Sacc. (Sacc. IX :121 as "*C. vinosulus* Berk.;" 57, No. 385 as *C. vinosus* Berk.; not *C. vinosum* Cke). In pine woods, Sikkim, 11,000 ft. (Hooker f.).

— *violaceus* Fr. (Sacc. V :924 ; 57, after No. 385). In woods, Myrong, Khasi Hills (Hooker f.).

*Crepidotus alveolus* (Lasch) Fr. (Sacc. V :877 ; 263 :331). On the ground, Botanic Garden, Saharanpur (Gollan).

— *applanatus* (Pers.) Fr. (Sacc. V :878 ; 263 :331). On dead branches, Arnigadh, Mussoorie (Gollan).

*Cyclomyces turbinatus* Berk. (57, No. 445 ; Sacc. VI :390). On decayed wood, Nunklow, Khasi Hills (Hooker f.).

*Daedalea andamani* Berk. in Herb. (174 :93 ; Sacc. XI :100). On trunks, Andaman Islands.

— *boseii* Lloyd (287 :1069, 1109, fig.; 70, VII :32). On dead branches of *Mangifera indica*, Bengal (Bose).

— *discolor* Fr. (Sacc. VI :383 ; 196 :125). Yomah, Burma (Kurz).

— *emodensis* Berk. (57, No. 444 ; Sacc. VI :374). On dead wood, Lebong, Darjeeling (Hooker f.).

— *flavida* Lév. (Sacc. VI :381 ; 70, V :24, figs.; 287 :1010 ; 70, VII :33 as *D. microzona* Lév. = form of *D. flavida* Lév.; 288, No. 60 :6 as "*Trametes flavida*"; 287 :1069). India (P. D. Master); on logs and bamboos, Calcutta (Bose); the form *microzona*, which is stated to have more regular pores and a thinner substance, Sunkna, Darjeeling (Bose). Lloyd (288, No. 36 :3) suggested that *D. flavida* is the same as *Lenzites ochroleuca* Lév. but he continued to use the former name also. See "*Lenzites flavida*."

— *gollanii* Massee (319, VIII :217 ; Sacc. XXIII :450). On dead wood, Mussoorie (Gollan).

— *hobsoni* Berk. (Sacc. VI :379 ; 70, II :143, figs.). Bengal (Bose). Perennial.

— *latissima* Fr. (Sacc. VI :383 ; 274 :482 ; 51 :382). Recorded from India (Wight), possibly in error for *D. sinulosa*.

— *pruinosa* Lév. (Sacc. VI :379 ; 84 :231 ; 286 :145 as *Sistotrema ochroleucum* Lév.; 288, No. 28 :2 ; 286 :143 as *Hexagonia glabra* Lév.; 57, No. 409 as

*Lenzites ochrophyllus* Berk.; 174 :93 as *Daedalea flabellum* Berk. in Herb.; 57, No. 340, as *Trametes lobata* Berk.; 196:124; 467:157 as *Lenzites ochroleuca* Lév.; 287:503, fig.; 288, No. 31:3, and No. 49:3; 293:31, figs., as *Hexagonia ochroleuca*. On trunks, Bombay (Polydore Roux); on dead charred wood, Darjeeling, 7,500 ft., and on dead wood, Mungdurbi, Darjeeling, 4,000 ft. (Hooker f.); on old logs, Sikkim Terai (Kurz); Khandala, Bombay (Blatter); Bengal (Hutchings); India (Kirtikar; Cave). Lloyd (293) discusses the synonymy of this polymorphic fungus. In its most usual form it is a *Lenzites*. Lloyd considers that *Daedalea flavida* Lév. (see above) may be the same species. Bresadola (84:230-231) considers *Daedalea pruinosa* the name to apply to this species. The type specimens of *Hexagonia glabra* and *Sistotrema ochroleucum* are in good condition at Paris, with notes by Bresadola.

[*Daedalea*] *quercina* (L.) Pers. (Sacc. VI:370; 70, I:113). On dead wood, Calcutta (Bose).

—*sinulosa* Klotzsch (239:495; Sacc. VI:384). On wood, India. See *D. latissima*.

—*suberosa* Massee (319, IV:94; Sacc. XXI:351). On wood, Mysore (Butler).

—*subsulcata* Berk. & Broome (Sacc. VI:372). On dead wood, Narcondam, Andaman Islands (C. G. Rogers).

—*tenuis* Berk. (Sacc. VI:376; 57, after No. 443; 196:125). On dead wood Parasnath, and Khasi Hills (Hooker f.); Yomah, Burma, and South Andaman Island (Kurz).

—*unicolor* (Bull.) Fr. (Sacc. VI:377; 70, IX:41). On prostrate trunks and stumps, Pashok, Darjeeling and Kawngghka, Burma (Bose).

—*zonata* Schwein. (Sacc. VI:382; 196:125). Pellowa, Toukyoghat, Burma (Kurz).

*Deconia atro-rufa* Schaeff. (Sacc. V:1059; 263:330 as *Psilocybe atrorufa* (Schaeff.) Fr. form *minor*). On the ground, Botanic Garden, Saharanpur (Gollan).

*Eccilia blandfordii* P. Henn. (260:153; Sacc. XVI:82). On the ground, Kalsia (J. H. Blandford); Botanic Garden, Saharanpur (Gollan).

—*griseo-rubella* (Lasch) Sacc. (Sacc. V:730; 263:333). A form, on the ground, Botanic Garden, Saharanpur (Gollan).

*Elmerina vespacea* (Pers.) Bres. (84:231; 240:101 as *Hexagonia macrostema* Jungh.; Sacc. VI:369). Recorded by Fries from Java and India, but Lloyd (293:30) found no Indian specimen; yet he (288, No. 28:2) records *Hexagonia albida* Berk., which Bresadola (84:230) considers to be *E. vespacea*, from Bengal (Hutchings); see also *Lenzites alutacea*.

*Entoloma cystopodium* Berk. (57, No. 285; Sacc. V:698). On dead leaves, twigs, moss, etc., Darjeeling, 8,000 ft. (Hooker f.).

—*euthelum* Berk. (57, No. 378; Sacc. V:694). In pine woods, Sikkim, 11,000 ft. (Hooker f.).

- [*Entoloma*] *goliath* Hook. fil. (57, No. 284; Sacc. V :680 as *E. goliath* Berk.). In woods, Darjeeling, 7,500 ft. (Hooker f.).
- *microcarpum* Berk. & Broome (Sacc. V :687; 78 :256). Growing from old termite nests or from the soil, Hooghly District and elsewhere in Bengal (Bose). Commonly eaten by the villagers.
- Exidia bursaeformis* Berk. (57, No. 348; Sacc. VI :773). On moss and tree trunks, Darjeeling, 7,000-10,000 ft. (Hooker f.).
- *glandulosa* (Bull.) Fr. (Sacc. VI :773; 349 :23). Nilgiris (Perrottet). A small specimen is in Montagne's Herbarium.
- var. *fuliginosa* Mont. (350 :152). On old trunks, near Kaschaou (Bélangier).
- Exobasidium assamense* Syd. & Butler (455 :275; Sacc. XXIII :556). On leaves of *Camellia drupifera*, Dumpep, Khasi Hills (Burkill & Banerjee).
- *butleri* Syd. (455 :279; Sacc. XXIII :554). On leaves of *Rhododendron arboreum*, Kumaon Himalaya (Inayat).
- *cinnamomi* Petch (Sacc. XXI :419; 367, III :279). It is perhaps a fungus identical with this Ceylon species to which Gamble (242 :438) referred as *E. cinnamomi* Massce to be published (a nomen nudum, as the description was never published by Massce), on leaves of *Cinnamomum tamala*, Himalaya. (A mention of this fungus is also given in 357 :133). No Indian specimen was found at Kew.
- *euryae* Syd. & Butler (455 :275, figs.; Sacc. XXIII :555; 111 :85, fig.). On inflorescence of *Eurya acuminata*, Khatamandu, Nepal (Manners Smith).
- *indicum* Syd. & Butler (455 :279, figs.; Sacc. XXIII :555; 511 :36, fig.). On leaves of *Symplocos theaeifolia*, Darjeeling (McRae).
- *piroidis* P. Henn. (455 :277; 511 :37). On leaves of *Pieris ovalifolia*, Ranikhet (Butler); Darjeeling (Hafiz Khan); jungles in the neighbourhood of Kalimpong, near Darjeeling (Tunstall).
- *vexans* Massce (318 :109; Sacc. XVI :198; 111 :422, figs.; 310, figs.; 322, figs.; 323, figs.; 455 :274; 511 :499; 501; 503). On leaves and twigs of *Thea sinensis*, Assam and Darjeeling (Mann; McRae; Tunstall; Bose; Butler, et al.).
- Favolus bengala* Bose in Lloyd (287 :1147, fig., 952 and 1010; 79 :138). India (Bose).
- *brasiliensis* Fr. (Sacc. VI :394). Recorded by Saccardo as from Sikkim.
- *boucheanus* Klotzsch (Sacc. VI :392). Narcondam, Andaman Islands (G. G. Rogers).
- *jacobaeus* Sacc. & Berl. (Sacc. IX :203; 287 :1126). South India (D. Marudra Rajan).
- *scaber* Berk. & Broome (Sacc. VI :393; 70, I :113). On rotten wood, Calcutta (Bose). Petch (372 :28, 57) states that this is a *Hexagonia*, and renames it *H. scabra* (B. & Br.) Petch.

- [*Favolus*] *septiporus* Berk. (57, No. 446; Sacc. VI :402). On dead wood, Nunklow, Khasi Hills (Hooker f.).
- *spathulatus* (Jungb.) Bres. (84 :230; 57, after No. 445, as *F. multiplex* Lév.; Sacc. VI :398; 287 :955 as *Polystictus vibecinus* Fr.). Churra (Hooker f.); India (Cave).
- *tenerrimus* Berk. (57, No. 341; Sacc. VI :396). Darjeeling (Hooker f.).
- *tessellatus* Mont. (Sacc. VI :393; 263 :327). On *Barringtonia acutangula*, Botanic Garden, Saharanpur (Gollan).
- Fistulina hepatica* Fr. (Sacc. VI :54; 57, after No. 343). Darjeeling, 4,000 ft. (Hooker f.).
- Flammula chrysomyces* Berk. (57, No. 289; Sacc. V :825). On dead wood, Darjeeling, 7-8,000 ft. (Hooker f.).
- *dilepis* Berk. & Broome (Sacc. V :812; 71 :351, figs.). Very common in stumps and holes in palms and large trees in Bengal (Bose).
- *flavida* (Schaeff.) Fr. (Sacc. V :820; 57, after No. 379, as *Agaricus flavidus* Schaeff.). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *macrophala* (Berk.) Sacc. (Sacc. V :817; 57, No. 293, as *Agaricus (Hypholoma) macrophalus* Berk.). On tree trunks, Darjeeling, 7-8,000 ft. (Hooker f.).
- *phlegmatica* Berk. (57, No. 379; Sacc. V :815). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *sapinea* Fr. (Sacc. V :824; 57, after No. 401; 263 :333; 319, III :151). Simla (Thomson); on wood?, Botanic Garden, Saharanpur (Gollan); Mirga Forest, Chitral Relief Expedition, 9,000 ft. (Duthie).
- Fomes adamantinus* (Berk.) Sacc. (57, No. 426 as *Polyporus (Placodermi) adamantinus* Berk. (Sacc. VI :204; 70, VII :30; 299 :235, fig.). On dead wood, Khasi Hills and Darjeeling (Hooker f.); at the base of a palm tree, Royal Botanic Garden, Calcutta (Bose).
- *annosus* Fr. (Sacc. VI :197; 265 :191; 266 :135; 88, figs.; 89 :18; 70, IX :39). On roots and collar of *Cedrus libani* var. *deodara*, Himalaya, and on *Abies pindrow* and *Picea morinda*, Deoban, Jaunsar (Hole); at the base of stumps of pine trees, and on pine wood paling, Shillong (Bose).
- *annularis* Lloyd (70, II :141, figs.). On tree trunks, Darjeeling (Bose).
- *badius* Berk. (Sacc. VI :175; 89 :48; 299 :249; 516, figs., as *F. puppianus* Bres.). Parasitic on *Acacia arabica*, Berar (Vahid) and Sind. Lloyd (299 and 288, No. 60, note 383) considers this species to be very close to *F. rimosus*.
- *brunneo-pictus* Berk. (Sacc. VI :155; 196 :122, figs., as *Polyporus (Pleuropus) brunneo-pictus* Berk. var.). On old wood, Arracan, Kolodyne Valley (Kurz).
- *durissimus* Lloyd (73 :130, figs.; 287 :1069). On dead stem of *Artocarpus* and on fern stem, Calcutta (Bose).
- *elegans* Wakefield (519, XXIV :207; Sacc. XXIII :399). On living *Shorea robusta*, Singhbhum, Bengal (Hole). Not recorded as especially injurious.



- [*Fomes*] *endophaeus* Berk. (57, No. 427 as *Polyporus (Placodermi) endophaeus* Berk.; Sacc. VI:178). On dead wood, Khasi Hills (Hooker f.). Lloyd (299:280) states that no type exists, but that it was probably *F. melanoporus* (q. v.).
- *fastuosus* Lév. (Sacc. VI:172; 70, VII:31; 287:1069). On trunks, Jalpaiguri, Bengal (Bose). Bose considers this practically equivalent to *F. senex*, and notes that Lloyd (299:250, 277) considers *F. fastuosus* very similar to *F. pseudosenex*.
- *fomentarius* (L.) Fr. (Sacc. VI:179; 299:281, 235, fig.; 288, No. 49:3; 287:1295; 57, after No. 425, as *Polyporus fomentarius*; 352 as *Elfungiella fomentaria*; 157:2 as *Polyporus introstuppeus* Berk. & Cke). On dead wood, Khasi Hills and Darjeeling, growing to an enormous size on poplars in the more northern Himalaya (Hooker f.); on branches of *Juglans*, north-west India; India (G. H. Cave; B. Sahni; P. L. Dey); on *Betula*, Sonamarg, Kashmir (R. R. Stewart). Bresadola considers "*P. introstuppeus* Berk." to be "*Fomes inzengeae* Fr." (84:225).
- *geotropus* Cke (Sacc. VI:166; 287:1186). India (Bose).
- *holosclerus* Berk. (Sacc. VI:193; 196:123 as *Polyporus (Placodermi) holosclerus* Berk.). Yomah, Myodwine, Burma (Kurz). Lloyd (300:380) states that this species is *Polyporus gilvus*.
- *hypoplastus* Berk. (Sacc. VI:151; 196:121 as *Polyporus (Mesopus) hypoplastus* Berk.). On bamboo, Howrah District, Bengal (Kurz).
- *igniarius* (L.) Fr. (Sacc. VI:180; 57, after No. 426, as *Polyporus igniarius* Fr.). On dead trees, Darjeeling (Hooker f.).
- *inzengeae* de Not. (Sacc. VI:175). See *F. fomentarius* above.
- *lamaoensis* (Murr.) Sacc. & Trott. (Sacc. XXI:287; 287:1069, 1186, 1266; 70, VII:29; 506:28; 493:6, figs., as *Hymenochaete noxia* Berk.; 111:429, figs.; 494:115; 393:4; 394:4; 433). On roots of many trees and shrubs, including tea, coffee, rubber, and cinchona, Assam and Bengal (Tunstall); Sundribunds, Bengal (Bose); Burma (Rhind); India (D. Marudra Rajan).
- *lignosus* Klotzsch (Sacc. VI:146 as *Polyporus*; 70, VII:28 as *F. lignosus* form *kamphoeveneri* Fr.; 392:5; 506:35). On stumps of various trees and other plants, Sukna, Darjeeling (Bose); almost unknown on rubber in Burma (Rhind); rare on tea, northeast India (Tunstall). Discussed by Lloyd (299:230), who considers *F. kamphoeveneri* Fr. to be a synonym.
- *marginatus* Fr. (Sacc. VI:168; 57, after No. 427, as *Polyporus marginatus* Fr.; 196:123). On dead trees, Khasi Hills and Sikkim (Hooker f.); in pine forests, Bookee, Karen Country, Burma, 4-6,000 ft. (Kurz). Lloyd (299:219) states that this is only a form of *F. pinicola* Fr. occurring on frondose trees. He states that he has seen specimens of *F. pinicola* from India, but does not indicate the type of host of the specimens.
- *melanoporus* Mont. (Sacc. VI:196; 70, VII:30; 299:240, 279; 287:1069; 157:2 as *F. cornu-bovis* Cke, *Polyporus phaenus* Berk. in Herb.). In Dooars

- Forests, Jalpaiguri, Bengal (Bose); on rotten branches, Khasi Hills. As mentioned, Lloyd suggests that *F. endophaeus* Berk. is probably this species.
- [*Fomes*] *nigro-laccatus* Cke (Sacc. VI:177; 287:1165; 288, No. 38:8; 299:265). India (H. Val Ryan). Lloyd considers this species to be a *Ganoderma* similar to *G. applanatum*.
- *pachyphlaeus* Patouill. (Sacc. IX:174; 70, V:22, figs.; 299:260, 279; 70, VII:32 as *F. elmeri* (Murr.) Sacc. & Trott.). On outer bark of *Ficus bengalensis*, Royal Botanic Garden, Calcutta, and on dead wood, in grassland forest, Cox's Bazaar, Bengal (Bose). Bose keeps the two species separate, although he recognizes that Lloyd considered them identical.
- *pallidus* Petch (Sacc. XXIII:399; 70, III:2, figs.). On wood, Tipperah, Bengal (Bose).
- *pectinatus* Klotzsch (Sacc. VI:193; 70, V:23, figs.; 299:253, figs.; 274:185 as *Polyporus pectinatus* Klotz.; 51:388). India (Wight); on bark of *Glycosmis pentaphylla*, Bengal (Bose); "Used by the villagers as a curative against eczema of the ear" (Bose).
- *peguanus* Mont. (350:148; Sacc. VI:179). On trunks of *Nauclea*, Burma (Bélangier). Lloyd (299:284) states that the type is in Berlin, and is the same as *F. caliginosus* Berk.
- *pinicola* Fr. (Sacc. VI:167; 299:219). Lloyd's mention of India is noted under *F. marginatus*. See also *F. unguatus*.
- *pseudoferreus* Wakefield (Sacc. XXIII:399; 394:3; 386:647). On roots of *Hecca brasiliensis*, Burma (Rhind; Pinching).
- *pseudosenex* (Murr.) Sacc. & Trott. (Sacc. XXI:292; 288, No. 60:7). Northwest Himalaya, 6,500 ft. (W. T. Saxton.)
- *pudens* Berk. (57, No. 418 as *Polyporus (Pleuropus) pudens* Berk.; Sacc. VI:162). In woods, Myrong, Khasi Hills, 6,000 ft. (Hooker f.). Lloyd (296:126) states that this species is known from a single, young, half specimen.
- *rimosus* Berk. (Sacc. VI:181; 260:151; 70, V:23, fig.; 435:69; 287:1125). On dead trunks of *Dalbergia sissoo*, Kalsia (J. H. Blandford); on dead stem of *Heritiera minor*, Sundribuns, Bengal (Bose); on a living *Acacia* sp., Coimbatore (435); India (D. Maruda Rajan).
- *rufolaccatus* Bose (73:129, fig.; 287:1069, 1147, fig.). On a dead tree, Simla District (Bose).
- *semitostus* Berk. (57, No. 430 as *Polyporus (Placodermei) semitostus* Berk.; Sacc. VI:200; 391:140; 299:221; 287:1126 as *Trametes semitosta*). On dead wood, Khasi Hills (Hooker f.); South India (D. Maruda Rajan); Nicobar Islands. Bresadola (84:235) considers *Polyporus plebejus* Berk. from India to be *F. semitostus*, but Lloyd (299:220, 227; 288, No. 68:10) does not agree, and refers both species to *Trametes* (see *T. plebeja* below). *Fomes semitostus* has also been confused with *F. lignosus*.

- [*Fomes*] *senex* Nees & Mont. (Sacc. VI:164; 57, after No. 426, as *Polyporus senex* Nees & Mont.; 472:151; 467:157 as *Polyporus ? senex* Mont.; 70, IV:2, figs.; 288, No. 38:8, No. 60:6, No. 69:5; 299:259, fig.). On tree trunks, Sikkim; on dead trees, Khasi Hills and Darjeeling (Hooker f.); on old stems, St. Xavier's College, Bombay (Blatter); on dead stumps, Khulna and Calcutta (Bose); India (H. V. Ryan; P. D. Master; Cave).
- *spadiceus* Berk. (51:388 as *Polyporus spadiceus* Berk.; Sacc. VI:193; 300:358). On trunks, India (Wight). The fungus referred by Troup (490:19) to *Fomes fulvus* (Scop.) Bres. on *Xylia dolabriformis*, Burma, is considered by Weir (in litt.) to be probably *F. spadiceus*.
- *subresinosus* Murrill (Sacc. XXI:285). Stated by Lloyd (299:215) to occur in India.
- *thomsoni* Berk. (57, No. 428 as *Polyporus (Placodermei) thomsoni* Berk.; Sacc. VI:170). On trunks, probably of pines, Simla (Thomson). Lloyd (299:286) states that the type is old and poor, and represents a *Trametes*, possibly *T. personii*.
- *ungulatus* (Schaeff.) Sacc. (Sacc. VI:167; 352). Sonamarg, Kashmir (R. R. Stewart). Lloyd (299:286) says *F. unguatus* is *F. pinicola*.
- *velutinosus* Lloyd (299:260, fig.). Bengal (Hutchings); India (Kirtikar). Lloyd states that this has the main characters of *F. senex*, but is thin, and possibly a *Polyporus*.
- *zeylandicus* Cke (Sacc. IX:168 as *Polyporus*; 288, No. 45:2). India (Irani), "compared with type at Kew" (Lloyd).
- Galera burkillii* Massee (319, X:2; not in Sacc.). On the ground, Sureil, near Darjeeling (Burkill).
- *delicatula* Massee (319, XIII:189; Sacc. XXIII:279). In grass, Government Experimental Farm, Dacca (Burkill).
- *lateritia* Fr. (Sacc. V:860; 263:331). On the ground, Botanic Garden, Saharanpur (Gollan).
- *tenera* (Schaeff.) Fr. (Sacc. V:860; 57, after No. 290, as *Agaricus tener* Schaeff.). On the ground, Jalapahar and Darjeeling, 7,500 ft. (Hooker f.).
- *violenta* Berk. (57, No. 382; Sacc. V:861). In moss and on decayed wood in pine forest, Sikkim, 11,000 ft. (Hooker f.).
- *zeylanica* Petch (Sacc. XXIII:281; 71:351, figs.). On the ground in grass, Hooghly, Bengal (Bose).
- Ganoderma amboinensis* (Lam.) Pat. (Sacc. VI:156 as *Fomes amboinensis* (Lam.) Fr.; 196:122 as *Polyporus amboinensis* Fr.). Karen Country, Burma, 4,000 ft. (Kurz). Currey states that it is probably not distinct from *G. lucidum*.
- *applanatum* (Pers.) Pat. (Sacc. VI:176 as *Fomes applanatus* (Pers.) Wallr.; 263:325; 467:155; 70, III:4, figs.; 506:32; 70, V:22, figs., as *Fomes leucophaeus* Mont.; 299:264; 287:1010, 1069, 1263; 196:123 as *Polyporus (Placodermei) applanatus* Fr.). Toukyeghat, Toungoo, Burma (Kurz); on tree trunks,

Botanic Garden, Saharanpur (Gollan); Khandala, Bombay (Blatter); Bengal (Bose); India (H. V. Ryan); on tea, Darrang (Tunstall). Lloyd considers *F. leucophaeus* to be only a form of *G. applanatum*. He (299:265) interprets *F. nigro-laccatus* Cke as a form of *G. applanatum*, and records it for India (288, No. 38:8), although the "types" are different and Bresadola (84:226) refers Cooke's species to *Polyporus galegensis* Mont.

[*Ganoderma*] *australe* (Fr.) Pat. (Sacc. VI:176 as *Fomes australis* Fr.; 263:325; 299:265; 288, No. 31:2, No. 47:2; 2:55; 57, after No. 425, as *Polyporus australis* Fr.). On wood, East Nepal and Khasi Hills (Hooker f.); Arnigadh, Mussoorie (Gollan); on *Grevillea* and *Coffea* roots, South India (McRae); India (Cave; Bashambar). Lloyd (287:1165) states that many of the older determinations are merely tropical forms of *Ganoderma applanatum*.

—*colossum* (Fr.) Bres. (Sacc. VI:138 as *Polyporus colossus* Fr.; 300:368, figs.; 288, No. 38:5; 70, IV:3, figs.). On logs, Hooghly, Bengal (Bose); India (J. H. Irani).

—*lucidum* (Leyss.) Karst. (Sacc. VI:157 as *Fomes lucidus* (Leyss.) Fr.; 260:151; 391:141; 70, II:142, figs.; 263:325; 288, No. 27:1, No. 31:3, No. 40:3, No. 60:5; 97, figs.; 92; 113 (6):53; 467:155; 372:47; 287:1295; 331; 495:91; 393:3; 506:33; 57, after Nos. 337 and 417, as *Polyporus lucidus* Fr.; 196:122; 467:155 as *Ganoderma resinaceum* (Boud.)). On trunks of old trees, Darjeeling and Sone River, Bihar (Hooker f.); Royal Botanic Garden, Calcutta (Kurz); on dead roots of *Casuarina*, Botanic Garden, Saharanpur (Gollan); on trunks, Victoria Garden, Bombay, Adheri, and Salsette (Blatter); Calcutta and Hooghly, Bengal (Bose); on *Areca catechu*, which it apparently kills, Sylhet (Butler); Kulna; on *Guazuma* sp., Pusa (Hafiz Khan); on *Acacia melanoxylon*, Nilgiris, and *Pongamia glabra*, Bangalore (McRae); on tea stumps, Assam and Bengal (Tunstall); on *Morus* sp. cult., Maymyo, Burma (Rhind); on wood, Sukkur (J. H. Irani); India (H. E. Houghton; P. L. Dey); Nicobar Islands. Specimens of a form of this species were sent by Mr. R. S. Hole, Dehra Dun, to Massee, and named in litt. *Polystictus egregius* Massee, n. sp. (a nomen nudum). Specimens, possibly duplicates of those sent Massee, were sent to Pusa by Hole, and referred from Pusa to Miss Wakefield, who regards them as belonging to *G. lucidum*. See also *G. amboinensis*.

—*subornatum* Murr. (Sacc. XXI:300; 70, IV:2, fig.; 299:269). On logs, Darjeeling (Bose).

*Gloeoporus conchoides* Mont. (Sacc. VI:403; 70, VIII:28 as *Polyporus conchoides* Mont.). On a dead tree, Chittagong (Bose).

—*corrugatus* Berk. in Herb. (177:105; Sacc. XI:103). On trunks, Nilgiris.

*Grandinia granulosa* Fr. (Sacc. VI:501; 196:126). Pellowa, Toukyeghat, Burma (Kurz).

*Guepinia spathularia* (Schw.) Fr. (Sacc. VI:807; 287:1263; 196:127, figs., as *G. ramosa* Currey; 263:323). On old wood, Arracan and Howrah (Kurz);

Royal Botanic Garden, Calcutta (Butler); Botanic Garden, Saharanpur (Gollan); India (Bose). Massee (314:6) states that *G. ramosa* is identical with *G. fissa* Berk., and Bresadola (84:234) states that *G. fissa* is a form of *G. spathularia*.

**Hebeloma catervarium** Lév. (286:113 as *Agaricus catervarius* Lév.; Sacc. V:804).

On trunks, Nilgiris (Perrottet). A specimen was not found at Paris.

—**thomasianum** Cke (172:7; Sacc. IX:102). Growing in a cactus hedge, Belgaum (Mrs. Thomas).

**Helicobasidium purpureum** (Tul.) Pat. (Sacc. XIV:1175 as *Rhizoctonia violacea* Tul.; 326:110; 409:139). On stems and roots of *Medicago sativa*, Hosur, Salem District, Madras (McRae). The connection with *Helicobasidium* is reported by Buddin and Wakefield (Trans. Brit. Myc. Soc., XII, pp. 116-140, 4 pls., 1927).

**Hexagonia aculeata** Mont. (Sacc. VI:358; 286:143). Nilgiris (Perrottet). Although Lloyd (293:9) states that this species is known only from one collection made in French Guiana, the Paris Herbarium has also two pilei so labelled from the Nilgiris, collected by Perrottet in 1840.

—**apiaria** Pers. (Sacc. VI:358; 70, IV:5, figs.; 435:74; 287:1125; 273:200, fig., as *Polyporus wightii* Klotzsch; 57, after No. 445, as *Hexagonia wightii* Klotzsch; 293:6, figs.). India (Wight); Sone River, Bihar (Hooker f.); Hooghly, Bengal (Bose); Madras (435); India (Marudra Rajan). See *H. sinensis* below.

—**burchelli** Berk. in Lloyd (288, No. 61:7; 287:1069; 70, VII:34; 372:56). India (G. H. Cave); on dead trunk of *Diospyros embryopteris*, Faridpur, Bengal (Bose).

—**discopoda** Pat. & Har. (Sacc. XI:98; 79:140). India (Bose). Stated by Petch (372:56) to be the common Ceylon *Hexagonia*; according to Lloyd (288, No. 28:3) a form of *H. tenuis* (q. v.). Cultured by Bose (81).

—**kurzii** Currey (196:126, figs.; Sacc. VI:360; 70, VII:35). On trunks, Mutlah, Lower Bengal (Kurz); Jalpaiguri, Bengal (Bose).

—**levis** Berk. in Herb. (175:103; Sacc. XI:99). On trunks, Andaman Islands. Lloyd (293:17) remarks that the species is based on nondescript material, but that he judges that it belongs to the section *Unguliformis*.

—**scutigera** Fr. (Sacc. VI:362; 472:150). Reported for India, but Theissen (l.c.) states that he doubts that *H. scutigera* occurs in India, for it is a form of *H. variegata*, which is an exclusively American plant. (See also Lloyd, 293:13).

—**sinensis** Fr. (Sacc. VI:357; 273:201; 51:382 as *Polyporus (Favolus) sinensis* Fr.; 239:489 as *Trametes sinensis* Fr.). Recorded by Klotzsch and Berkeley from India (Wight), and considered synonymous with *P. wightii* Kl., but Lloyd (293:45) states that African specimens from Klotzsch are *H. hirta*.

- [*Hexagonia*] *subtenuis* (Berk. in Herb.) Lloyd (293:26, 41; Sacc. **XXI**:348; **70**, I:114; 287:502, fig.; 288, No. 31:3; 175:103 as *H. tenuis* var. *subtenuis* Berk. in Herb.). Nilgiris; Bombay (Kirtikar). Lloyd (l.c.) discusses this species, which he considers distinct from *H. tenuis*.<sup>4</sup>
- sulcata* Berk. (Sacc. **VI**:364; **70**, **VII**:35). On dead wood, Jalpaiguri, Bengal (Bose).
- tenuis* Hooker (Sacc. **VI**:366; 51:382 as *Polyporus (Favolus) tenuis* Hook.; 57, after No. 445, and 196:125 as *H. tenuis* Fr. and as *H. polygramma* Mont.; 260:152 as form *minor*; 263:327; 84:231; 288, No. 28:2, No. 60:6; 293:22, figs.; 467:157; 287:1126, 1295; 285:199; 349:22). On branches and trunks of trees, Parasnath and Sone River in Bihar, East Nepal, and Darjeeling (Hooker f.); Pellowa, Toukyeghat, Burma (Kurz); Botanic Garden, Saharanpur (Gollan); Bassein and Khandala (Blatter); Bilaspur, Central Provinces (Marten); Bengal (Hutchings); India (P. D. Master; P. L. Dey); South India (D. Maruda Rajan); Nicobar Islands. Lloyd and Bresadola regard *H. polygramma* as a large pored form of *H. tenuis*. Lloyd (288, No. 28:3) received a *Hexagonia* from Bengal (Hutchings) which he considered probably the same as Fries' *H. tricolor*, which is, from its description (no type exists), close to or identical with *H. discopoda*, which is a form of *H. tenuis*. An Indian specimen of *H. polygramma*, perhaps from the Nilgiris, is at Paris.
- umbrinella* Fr. Sacc. **VI**:365; 288, No. 49:4). India (Cave). Lloyd (293:26) considers this species to be close to *H. tenuis*.
- Hirneola ampla* (Pers.) Fr. (Sacc. **VI**:765; 284:179, figs., as *Evidia nobilis* Lév.; 285:218). On dead wood, Mussoorie (Jacquemont). The specimen at Paris is placed under *Hirneola nobilis* (Lév.) Fr., and bears a note by Bresadola: "vix dubia-*Hirneola nigra* (Sw.) Fr." but he (84:235) published it as a synonym of *H. ampla*.
- auricula-judae* (L.) Berk. (Sacc. **VI**:766; 196:128; 288, No. 28:2, No. 47:2, No. 69:5; 287:1295; 494:117; 495:87; 497:37; 352; 467:154 as *Auricularia sambucina* Mart.). On trunks, etc., Nakawa, Toukyeghat, Burma (Kurz); Khandala, Bombay (Blatter); Bengal (Hutchings); Sonamarg, Kashmir (R. R. Stewart); India (Bashambar; Cave; P. L. Dey); on tea stems, which it injures (Tunstall). Petch (367, II:414) discussed this and related tropical species.
- auriformis* (Schw.) Fr. (Sacc. **VI**:765; 57, after No. 347, as *Evidia protracta* Lév.; 84:234). On trunks of living trees, Sikkim (Hooker f.).
- cochleata* Fr. (Sacc. **VI**:765; 57, after Nos. 347 and 453, as *Evidia hispidula* Berk.; 84:233). Darjeeling; Kosderah, Sone River (Hooker f.).
- crassa* Lloyd? (287:1275, figs., 1266). India (D. Maruda Rajan). Considered by Lloyd to be a dark, thick form of the next.

- [*Hirneola*] *delicata* (Fr.) Bres. (84:231; Sacc. VI:407 as *Laschia tremellosa* Fr.; 57, after No. 453; 287:784, fig.). In woods, Lebong, Darjeeling, 5,000 ft. (Hooker f.).
- *nigra* (Swartz) Fr. (Sacc. VI:768; 196:128 as *H. auricula canis* Fr.). On logs, North Yomah, Burma (Kurz).
- *polytricha* Mont. (Sacc. VI:766; 319, III:152; 288, No. 60:6; 350:154 as *Evidia polytricha* Mont.; 263:323 as *Auricularia polytricha* Mont.; 467:154; 287:1295; 68:147). On wood, India (Bélanger); Belgaum (Hobson); Poona (Woodrow); Arnigadh, Mussoorie (Gollan); Khauheri Caves, Bombay (Blatter); India (P. D. Master; P. L. Dey); Dastikop, Dharwar (Sedgwick); on dead twigs of *Tectona grandis*, Nidungayam, Malabar (Fischer).
- Hydnum aitchesoni* Berk. (65:137; Sacc. VI:454). Gulmarg, Kashmir, 8,500 ft. (Aitcheson). Esculent; vernacular name "Ryle grīb".
- *analogum* Berk. in Herb. (178:1; Sacc. XI:108). On rotten wood, Nilgiris.
- *auriscalpium* L. (Sacc. VI:445; 57, after No. 398). On fir-cones, Myrong, Khasi Hills (Hooker f.).
- *coralloides* Scop. (Sacc. VI:446; 57, after No. 343; 319, III:152). In crevices on old tree trunks, Darjeeling, 7,500 ft. (Hooker f.); Chitral Relief Expedition (Duthie).
- *delicatulum* Klotzsch in Fr. (239:515; Sacc. VI:458). On trunks, India.
- *delicatum* Klotzsch in Berk. (51:395; Sacc. VI:470; 349:23). On rotten *Jatropha curcas*, Madras (Wight); on dead trunks, Kunda, Nilgiris (Perrottet). A good specimen of the latter is in Herb. Montagne, marked "verum ex. Berkeley".
- *erinaceus* Bull. (Sacc. VI:449; 57, after No. 448). Abundant on dead wood, Sikkim, 7,500 ft. (Hooker f.).
- *flabelliforme* Berk. (Sacc. VI:457; 57, after Nos. 344 and 448). On dead wood, Darjeeling, 7-8,000 ft., and Lebong (Hooker f.).
- *gilvum* Berk. (57, No. 344; Sacc. VI:459; 367, III:276). On dead trunks, Darjeeling (Hooker f.). A specimen was sent by Berkeley to Montagne.
- *gleadowii* Massee (319, II:166; Sacc. XVI:175; 242). On dead wood, Dehra Dun (Gleadow). The species name and collector were published in error as "gleadonii" and "Gleadow". Miss Wakefield, Kew, informs us that this is not a *Hydnum*, but a *Polystictus*, probably *P. leominus*.
- *lachnodontium* Berk. (178:2; Sacc. XI:108). On logs, etc., Nilgiris.
- *olidum* Berk. (Sacc. VI:443; 288, No. 65: 4, 8). India (Kashyap).
- *pulcherrimum* Berk. & Curt. (Sacc. VI:452; 287:1069). India (Bose).
- *repandum* L. (Sacc. VI:435; 263:325). On the earth, Arnigadh, Mussoorie (Gollan).
- *rufescens* Pers. (Sacc. VI:436; 288, No. 65:4). India (Kashyap).

- Hydnum**] *thwaitesii* Berk. & Broome (67:58; Sacc. VI:433). Nilgiris (E. S. Berkeley).
- ndum* Fr. (Sacc. VI:469; 196:126). Mutlah, Lower Bengal (Kurz).
- vespertilio* Berk. (57, No. 448; Sacc. VI:442). On the ground, Nunklow, Khasi Hills (Hooker f.).
- zonatum* Batsch (Sacc. VI:441; 57, after No. 447). On the ground, Nunklow, Khasi Hills (Hooker f.).
- Hygrophorus** *fulvus* Berk. (57, No. 388; Sacc. V:420). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- hobsoni* Berk. (66:39; Sacc. V:390). Central India (Hobson).
- miniatus* Fr. (Sacc. V:413; 57, after No. 386). In pine woods, Lachen, Sikkim, 10,000 ft. (Hooker f.).
- pomona* Berk. (57, No. 387; Sacc. V:420). On clay banks, Moflong, Khasi Hills (Hooker f.).
- Iymenochaete** *cacao* Berk. (57, No. 452 as *Stereum cacao* Berk.; Sacc. VI:592; 147:146; 287:955, 1266). On dead timber, Khasi Hills (Hooker f.); India (Cave; D. Marudra Rajan).
- carteri* Berk. in Herb. in Cooke (147:149; Sacc. VI:603). Bombay. Cooke published this as an imperfect, excluded species.]
- depallens* Berk. & Curt. (Sacc. VI:596; 147:147; 379:276; 263:324). On dead branches, Botanic Garden, Saharanpur (Gollan). This species was published in Berkeley & Broome (67:68) but marked "*H. depullens* B. & C." and is usually so cited, although Petch (379) gives Berkeley and Broome as the authors.
- leonina* Berk. & Curt. (Sacc. VI:597; 319, I:114). On dead bark, Jaunsar (Gamble).
- mougeotii* (Fr.) Cke (Sacc. VI:595; 57, after No. 452, as *Stereum mougeotii* Fr.; 196:127 as *Corticium mougeotii* Fr.). On wood, Yangma Valley, East Nepal, and Singalelah, Sikkim, 10,000 ft. (Hooker f.); on dead trees, Phallut, Sikkim, 11-12,000 ft. (Kurz).
- nigricans* (Lév.) Patouill. (Sacc. XXI:389; 467:155 as *H. strigosa* Berk. & Broome; 84:233; 379:274). On bark, Khandala, Bombay (Blatter).
- rheicolor* (Mont.) Lév. (286:151; Sacc. VI:591; 349:23 as *Stereum rheicolor* Mont.; 147:145; 379:273). On dead trunks, Gudalur, Nilgiris. The type is in Herb. Mont., and there are also three Nilgiri specimens in the general Herbarium at Paris.
- rubiginosa* (Schr.) Lév. (Sacc. VI:589; 147:145). Recorded as occurring in India, but no definite reference noted. No Indian specimens were found in the collections of Lévillé at Paris.
- tenuissima* Berk. (Sacc. VI:593; 147:146; 288, No. 65:4; 287:1263). India (Kashyap; Bose). According to Bresadola (84:233) the type of this species is *H. rheicolor*.



- [*Hymenochaete*] *villosa* (Lév.) Bres. (Sacc. **XXI**:389; 287:1263). India (Bose).
- Hypholoma appendiculatum* (Bull.) Sacc. (Sacc. **V**:1039; 263:330). On the ground, Botanic Garden, Saharanpur (Gollan).
- atrachium* Berk. (57, No. 295; Sacc. **V**:1035). On dead timber and soil impregnated with charcoal, Darjeeling, 7-8,000 ft. (Hooker f.).
- castanophyllum* Berk. (57, No. 296; Sacc. **V**:1035). On the ground, Jallapahar, Darjeeling (Hooker f.).
- condensum* Berk. (57, No. 297; Sacc. **V**:1042). On the ground, Darjeeling (Hooker f.).
- fasciculare* (Huds.) Fr. (Sacc. **V**:1029; 57, after Nos. 292 and 403). Abundant on dead wood, Darjeeling, 7-8,000 ft. (Hooker f.); Simla (Thomson).
- hemisodes* Berk. (57, No. 294; Sacc. **V**:1035). On earth banks, Darjeeling, 7,600 ft. (Hooker f.).
- sublateritium* (Schaeff.) Fr. (Sacc. **V**:1028; 57, after No. 292, as *Agaricus sublateritius* Fr.). On dead wood, Darjeeling, 8,000 ft. (Hooker f.).
- velutinum* (Pers.) Fr. (Sacc. **V**:1034; 57, after No. 293, as *Agaricus velutinus* Fr.). On earthy banks, Darjeeling, 7,500 ft. (Hooker f.).
- Inocybe echinata* (Roth) Cke (Sacc. **V**:773; 263:332). On the ground, Botanic Garden, Saharanpur (Gollan). Rea (British Basidiomycetæ, p. 206) refers this species to *Lepiota h. ematosperma* (Bull.) Boud.
- holophlebia* Berk. (176:104; Sacc. **XI**:52). On the ground, Masulipatam.
- Irpex canescens* Fr. (Sacc. **VI**:485; 467:155). On wood, Khandala, Bombay (Blatter).
- consors* Berk. (Sacc. **VI**:486; 287:1069 as "*Irpex consors*"). India (Bose).
- flavus* Klotzsch (Sacc. **VI**:486; 57, after No. 449; 196:126; 263:325; 467:155; 288, No. 28:7 and No. 42:11 as *Polystictus flavus* Junghuhn; 287:1295). On old wood, Sone River, Bihar (Hooker f.); Arracan (Kurz); Botanic Garden, Saharanpur (Gollan); Khandala and Salsette, Bombay (Blatter); Bengal (Hutchings); India (J. Ray; Kirtikar; P. L. Dey). Lloyd (287:903) prefers the name *Polystictus flavus*. The fungus has both *Irpex* and *Polystictus* forms. Berkeley (l.c.) records the variety *orbicularis* Jungh. on old bamboo, Ganges (Hooker f.).
- pallescens* Fr. (Sacc. **VI**:487; 196:126). Yomah, Burma (Kurz).
- vellereus* Berk. & Broome (Sacc. **VI**:489; 467:155). On dead wood, Khandala, Bombay (Blatter).
- zonatus* Berk. (57, No. 449; Sacc. **VI**:485). On dead wood, Sikkim and eastern Nepal (Hooker f.).
- Kordyana indica* Gäumann (244:264; 455:280 as *K. tradescantie* (Pat.) Rac.; Sacc. **XVI**:199). On leaves of *Commelina* sp., Pusa (Subramaniam). Gäumann points out that this is *K. tradescantie* of Raciborski, not of Patouillard.

- chnocladium hookeri* Berk. (57, No. 399; Sacc. VI:738). Khasi Hills (Hooker f.).
- etarius deliciosus* Fr. (Sacc. V:438; 57, after No. 388). Lachen, Sikkim, 11,000 ft. (Hooker f.).
- princeps* Berk. (57, No. 389, and after No. 404; Sacc. V:448). In woods, Kullung and Myrong, Khasi Hills, 6,000 ft. (Hooker f.).
- stramineus* Berk. (57, No. 404, not in Sacc.). On the ground, Pomrang, Khasi Hills, 5,000 ft. (Hooker f.).
- subdulcis* Fr. (Sacc. V:450; 57, after No. 389). Identified from drawings without notes.
- vellereus* Fr. (Sacc. V:437; 57, after No. 388). Fir woods, Sikkim, 10,000 ft. (Hooker f.). As Berkeley notes under No. 404, he first confused the specimens of *L. stramineus* with those of *L. vellereus*.
- Laschia intestinalis* (Berk.) Bres. (84:234; 57, No. 342 as *Favolus intestinalis* Berk.; Sacc. VI:400; 287:708, 785). Darjeeling (Hooker f.). Lloyd (l.c.) proposed the genus *Poroauricularia* for this fungus, which he regards as more an *Auricularia* than a Polypore.
- lamellosa* Berk. (57, No. 454; not in Sacc.; not *L. lamellosa* Pat., Sacc. IX:205). Lebong, Darjeeling (Hooker f.).
- subvelutina* Berk. (57, No. 343; Sacc. VI:410). On tree trunks, Darjeeling, 5-8,000 ft. (Hooker f.). Lloyd (287:839) states that this species "rests on a single, inadequate specimen, but not a *Laschia*. I would not say without cutting it whether it is a *Campanella* or an *Auricularia*".
- tinus alopecinus* Fr. (239:392; Sacc. V:589). Recorded as apparently on the ground, India.
- blepharodes* Berk. (Sacc. V:577; 288, No. 47:10). Botanic Garden, Saharanpur.
- candidus* Graff (Sacc. XXIII:167; 287:1069). India (Bose). Lloyd (l.c.) considers it a pale form of *L. sajor-caju*, except that the spores are different.
- capronatus* Fr. (Sacc. V:575; 196:119). Myodwino, Burma (Kurz).
- coadunatus* Hooker f. (57, No. 323; Sacc. V:601). On dead wood, Darjeeling, 7,500 ft. (Hooker f.). Lloyd (288, No. 47:13) is of the opinion that this species and *L. curreyanus* are the same as *L. subnudus*.
- connatus* Berk. (Sacc. XXI:116; 71: 347, fig.). On dead wood, Howrah District, Bengal (Bose). See *L. javanicus* below.
- curreyanus* Sacc. & Cub. (Sacc. V:586; 70, I:111; 196:120, figs., as *L. caespitosus* Currey, not Berk.). Burma (Kurz); Calcutta (Bose).
- descendens* Fr. (Sacc. V:587; 196:119). Tonkyeghat, Burma (Kurz).
- exilis* Klotzsch (Sacc. V:606; 148:98). Andaman Islands (Kurz).
- glabratus* Mont. (Sacc. V:605; 196:120). North Rajmahal Hills, North Bengal (Kurz).

- [*Lentinus*] *hepaticus* Berk. (57, No. 324; Sacc. V:603). On tree trunks, Darjeeling, 7,500 ft. (Hooker f.).
- hookerianus* Berk. (57, No. 322; Sacc. V:573). On dead wood, Darjeeling, 6-9,000 ft. (Hooker f.).
- inguinans* Berk. (57, No. 407, figs.; Sacc. V:583; 196:120). On dead wood, Mai Valley, East Nepal, 5,000 ft., and Changachelling, Sikkim, 7,000 ft. (Hooker f.); near Rangoon (Kurz).
- javanicus* Lév. (Sacc. V:599; 286:120 as *L. decaisneanus* Lév.). On trunks, Bombay (Polydore Roux). The type of *L. decaisneanus* at Paris has a note by Bresadola "est une forme très développée de *Lentinus javanicus*" and that *L. cretaceus* and *L. infundibuliformis* are also synonyms. Lloyd (288, No. 47:13) considers *L. javanicus* a synonym of *L. connatus*, and Petch (371:147) finds *L. infundibuliformis* a synonym of *L. connatus*, but Bresadola (84:222) seems to consider *L. javanicus* distinct from *L. connatus*.
- lecomtei* Fr. (Sacc. V:572; 57, after Nos. 321 and 405; 65:137; 371:151). On wood, Tonglo, Sikkim, 6-8,000 ft., and East Nepal (Hooker f.); Gulmarg, Kashmir (Aitcheson). Edible; vernacular name "Silry".
- melanophyllus* Lév. (Sacc. V:575; 260:152). On *Shorea robusta*, Bilaspur, Central Provinces (Marten).
- molliceps* Fr. (240:38; Sacc. V:603). Nicobar Islands (Kamphoevener).
- nepalensis* Berk. (57, No. 405; Sacc. V:573). On dead wood, Nangki, East Nepal, 9,000 ft. (Hooker f.).
- nicobarensis* Reichhardt (391:146, figs.; Sacc. V:599). On rotten trunks, Nicobar Islands.
- omphalomorphus* Mont. (Sacc. V:589; 242; 196:120 as *L. furfurosus* Fr.). Yomah, Burma (Kurz). Bresadola (84:234) states that *L. omphalomorphus* is a species of *Omphalia*, and Lloyd (288, No. 47:11) states that Currey's record of *L. furfurosus* refers to *L. praerigidus*.
- pergameneus* Lév. (286:117; Sacc. V:600). The type at Paris is marked "herb. de Candolle, Indes?" There is one other specimen there, from Cambodia.
- polychrous* Lév. (Sacc. V:590; 196:120, figs., as *L. kurzianus* Currey; 84:222). Yomah Range, Burma (Kurz). According to Lloyd (288, No. 47:11; 287:955) the next species is the commoner in India and Ceylon.
- praerigidus* Berk. (57, No. 406, figs.; Sacc. V:587; 70, I:110; 288, No. 28:3; 287:955, 1069, 1295). On dead wood, Sone River, Bihar (Hooker f.); Bengal (Hutchings); India (Cave; Kashyap; Bose). See *L. omphalomorphus*. Lloyd (288, No. 47:11) considers *L. kurzianus* to be a synonym of this species rather than of the preceding, but the two species are very similar.
- revelatus* Berk. (Sacc. V:592; 148:98; 287:1069). Andaman Islands (Kurz); India (Bose).

# THE FUNGI OF INDIA.

- mtinus] sajor-caju** Fr. (239:393; Sacc. V:598; 71:348, fig.; 288, No. 47:11; 287:1069; 288, Nos. 28:2 and 42:12 as *L. dactyliophorus* Lév.; 196:120, and 121, as *L. irregularis* Currey and *L. exilis* Fr.). India (Sundevall); South Andaman Island, and in pine forests from Theemeechu to Bookee, Karen Country, Burma (Kurz); on dead wood, Hooghli District, Bengal (Bose); Toukyeghat, Nakawa, and Sittang, Burma (Kurz); Calcutta (Bose); Bengal (Hutchings); India (J. Ray).
- squarrosulus** Mont. (349:21; Sacc. V:585). On dead trunks, Nilgiris (Perrottet). Type not found at Paris.
- strigosus** Fr. (Sacc. V:573; 352). Sonamarg, Kashmir (R. R. Stewart).
- subdulcis** Berk. (57, No. 325; Sacc. V:611). On dead wood, Darjeeling, 7-8,000 ft. (Hooker f.).
- subnudus** Berk. (Sacc. V:583; 71:348, fig.; 288, Nos. 47:13 and 49:3; 467:157 as *L. aff. subnudus*). On dead branches and logs, common in Bengal (Bose); India (Cave); Khandala, Bombay (Blatter). See also *L. coadunatus* and *L. curreyanus*.
- tigrinus** Bulliard (Sacc. V:580; 288, No. 47:13). India (S. N. Ratnagar). "Seems to be this species of Europe" (Lloyd).
- velutinus** Fr. (Sacc. V:589; 196:120; 288, No. 47:10). Yomah, Burma (Kurz); Bengal (Hutchings).
- villosus** Klotzsch (Sacc. V:574; 288, No. 47:9). Lloyd (l.c.) notes that there are specimens of this species from India at Kew.
- zites acuta** Berk. (Sacc. V:643; 57, after No. 410; 287:1186, 1295). On wood, Nunklow, Khasi Hills (Hooker f.); India (Bose; P. L. Dey). See next entry.
- adusta** Massee (319, XI:250; Sacc. XXII:1506 (name only); 287:1072; 70, IX:41). On wood, Bengal (Hutchings); Sylhet (Bose). Lloyd (l.c.) considers this to be a form of *L. acuta*, but differing in having a white context. Bose (l.c.) gives *L. beckeri* as a synonym but Massee said "allied to *L. beckeri*", and Lloyd (287:1000, fig.) considers the latter a good species.
- albida** Fr. (Sacc. V:637; 196:121). Toukyeghat, Burma (Kurz).
- alutacea** Cke (Sacc. V:649; 287:1010). Calcutta (Bose). Lloyd (l.c.) considers it "too close to *L. flavida*" and Bresadola (84:221) regards *L. alutacea* as a lenzitoid form of *Elmerina vespacea*. See also *L. murina*.
- applanata** Fr. (Sacc. V:644; 57, after No. 408). Lebong, Darjeeling, 6,000 ft. (Hooker f.). Petch (372:31) gives this name as a synonym of *L. repanda*.
- beckeri** Berk. (Sacc. V:645; 319, XI:250). "Also an Indian species" according to Massee. See *L. adusta*.
- betulina** (L.) Fr. (Sacc. V:638; 57, after No. 327; 263:328; 287:852, fig.; 70, II:138, figs.). On dead timber, Darjeeling, 3,000 ft. (Hooker f.); Arnigadh, Mussoorie (Gollan); India (G. H. Cave); Darjeeling (Bose).

- [*Lenzites*] *eximia* Berk. & Curt. (57, No. 410; Sacc. V:648). On dead wood, Darjeeling, 7,500 ft. (Hooker f.).
- “*flavida*” (288, No. 60:6; 287:1295). India (P. D. Master; P. L. Dey). Presumably Lloyd referred to a *Lenzitoid* form of *Dacdulca flavida*.
- “*imbricata* Fr.” (57, after No. 411). Darjeeling (Hooker f.). Presumably Berkeley referred to *Polyporus imbricatus* Fr., but he states that the specimens were old and uncertain.
- malaccensis* Sacc. & Cub. (Sacc. V:645; 70, IX:40). On old trunks and stumps, Assam, Darjeeling, and North Burma (Bose).
- murina* Lév. (Sacc. V:642; 287:952). India (Bose). Lloyd (287:1010) records that he found a later sending of the same number to be *L. alutacea*, and is uncertain as to the possible identity of the two collections.
- repanda* (Mont.) Fr. (Sacc. V:650; 57, after Nos. 327 and 408; 148:98; 70, III:4, figs.; 467:157; 288, No. 27:3; 287:1069; 57, after No. 410, as *L. pallida* Berk.; 196:121 as *L. palisota* Fr.; 287:1125 as *Dacdulca repanda* Mont.). Hot valleys of Sikkim Himalaya on dead tree trunks, 2-5,000 ft.; Khasi Hills, and East Nepal, 6,000 ft. (Hooker f.); Andaman Islands, and Seven Pagodas and Toukyeghat, Burma (Kurz); Dehra Dun and Simla (Blatter); Hooghly, Bengal (Bose); Bengal (Hutchings); India (Marudra Rajan). See *L. applonata*.
- rugulosa* Berk. (57, No. 328; Sacc. V:649). On trunks, Darjeeling (Hooker f.).
- sepiaria* (Wulf.) Fr. (Sacc. V:639; 70, IX:40). On wood palings of a bridge, Shillong (Bose).
- striata* Swartz (Sacc. V:643; 287:1295). India (P. L. Dey).
- subferruginea* Berk. (57, No. 411; Sacc. V:643; 288, No. 65:4 and No. 42:3 as “*Lenzites subferruginosus*”). On dead wood, Mollong, Khasi Hills (Hooker f.); India (Kashyap; Bashanubar).
- Lepiota alliciens* Berk. (61:20; 168:105; Sacc. IX:7). On the roof of a house, Masulipatam.
- altissima* Massee (319, I:114; Sacc. XVI:5; 524:363, figs.). In open pastures near Poona (Woodrow). Petch (367, I:47) states that this species seems to differ from *L. dolichaula* Berk. & Broome only in the size of the spores.
- anax* Berk. (57, No. 362; Sacc. V:71). On clay banks and amongst grass, Nunklow, Khasi Hills (Hooker f.).
- badhami* Berk. (Sacc. V:35; 68:151). Thana, Bombay (Blatter).
- beckleri* Berk. (Sacc. V:56; 319, III:151). On the ground, Poona (Woodrow).
- cepaestipes* Sowerby (Sacc. V:43; 319, III:151; 71:350). On the ground, India (Gardener); Poona (Woodrow); on rotten wood indoors. Jessore and Calcutta (Bose).

- [*Lepiotacepaestipes*] var. *lutea* With. (263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- clypeolaria* (Bull.) Fr. (Sacc. V:36; 263:335). A form, on the ground, Botanic Garden, Saharanpur (Gollan).
- cristata* (Alb. & Schw.) Fr. (Sacc. V:39; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- delicolum* Berk. (57, No. 244; Sacc. V:44). In the hollows of dead trees, Darjeeling, 8,000 ft. (Hooker f.).
- erminea* Fr. (Sacc. V:40; 70, I:112). In grassy places, Calcutta (Bose).
- excoriata* (Schaeff.) Fr. (Sacc. V:31; 145:13; 263:336; 319, III:151 as *L. excoriata* Karsten; 57, after No. 243, as *Agaricus excoriatus* Fr.). In hot valleys on the bare earth, Darjeeling (Hooker f.); Punjab (Aitcheson); Poona (Woodrow); on the ground, Botanic Garden, Saharanpur (Gollan).
- flavophylla* Massee (319, XIV:253; Sacc. XXIII:18). Calcutta (Burkill).
- ? *hispida* (Lasch) Fr. (Sacc. V:36; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- holosericea* Fr. (Sacc. V:42; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- implana* Berk. (57, No. 363; Sacc. V:41). On dry, stony hills, Moflong, Khasi Hills (Hooker f.).
- longicaudata* P. Henn. (260:153; Sacc. XVI:6; 263:336). On the ground, Kalsia (Blandford); Botanic Garden, Saharanpur (Gollan).
- malleus* Berk. (61:20; 168:105; Sacc. IX:3). On the ground, Masulipatam.
- mammosa* P. Henn. (263:335; Sacc. XVII:7). On the ground, Botanic Garden, Saharanpur (Gollan).
- mastoidea* Fr. (Sacc. V:33; 70, II:136, figs.; 74:643). Hooghly District, Bengal (Bose). Edible.
- meleagris* (Sow.) Fr. (Sacc. V:36; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- microspora* Massee (319, IV:92; Sacc. XXI:19). On the ground, Narcondam, Andaman Islands (Rogers).
- minica* Massee (319, XIV:253; Sacc. XXIII:11). In decaying mown grass, Calcutta Maidan (Burkill).
- montosa* Berk. (57, No. 401; Sacc. V:41). On the ground, Sikkim (Hooker f.).
- procera* (Scop.) Sacc. (Sacc. V:27; 263:336). On the ground under *Ficus carica*, Botanic Garden, Saharanpur (Gollan).
- punicea* Massee (319, XIV:253; Sacc. XXIII:17). Calcutta (Burkill).
- rhacodes* Vittad., var. *puellaris* Fr. (Sacc. V:29; 260:153). On the ground, Kalsia Hills (Blandford).
- seminuda* (Lasch) Juel (Sacc. V:50; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).

- [*Lepiota*] *sericea* Massee (319, XIV:254; Sacc. XXIII:10). In a plant pot and amongst grass, Calcutta (Burkill).
- sistrata* Fr. (Sacc. V:50; 263:335). On the ground, Botanic Garden, Saharanpur (Gollan).
- Lloydella bicolor* (Pers.) v. Hoehn. & Lits. (Sacc. VI:565 as *Stereum bicolor* (Pers.) Fr.; 57, after No. 346; 472:146). On dead wood, Darjeeling, 7,000 ft. (? Hooker f.).
- membranacea* (Fr.) Bres. (Sacc. VI:576 as *Stereum membranaceum* Fr.; 288, No. 46:5; 196:127 as *S. papyrinum* Mont.; 84:232). Timeokee, Burma (Kurz); Bengal (Hutchings). Petch (379:263) states that Ceylon specimens recorded as *S. papyrinum* do not agree with the diagnosis of *L. membranacea*.
- Lopharia mirabilis* (Berk. & Broome) Patouill. (Sacc. VI:496 as *Radulum*; 263:325). On dead twigs, Botanic Garden, Saharanpur (Gollan). Lloyd 288, No. 53:9 prefers to return this species to *Radulum*. He considers it (288, No. 59:4) a synonym of *R. neilgherrense* (q.v.).
- Marasmius Pandrosaceus* Fr. (Sacc. V:543; 263:329). On fallen bamboo on the ground, Botanic Garden, Saharanpur (Gollan).
- burmensis* Cke (149:122; Sacc. V:532). On twigs, Moulmein, Burma (Parish).
- caperatus* Berk. (57, No. 321; Sacc. IX:66). On twigs of live and dead bushes, Tonglo, Sikkim, 10,000 ft. (Hooker f.).
- consocius* Berk. (57, No. 320; not in Sacc.). On dead twigs, Darjeeling, 8,000 ft. (Hooker f.).
- peurreyi* Berk. & Broome (Sacc. V:556; 263:329). On dead leaves, Botanic Garden, Saharanpur (Gollan).
- equicrinus* Mueller (Sacc. V:553; 287:1295; 497:38; 504). India (P. L. Dey); on tea, Cachar (Tunstall). Petch (370:61) referred certain Indian specimens to this species, since they possessed similar mycelial threads.
- erythropus* Fr. (Sacc. V:520; 57, after No. 319). On the ground, Darjeeling (?Hooker f.).
- graminum* (Lib.) Berk. (Sacc. V:542; 260:152; 263:329). On dead grass, Botanic Garden, Saharanpur (Gollan).
- haematodes* Berk. (57, No. 390; Sacc. V:568). On pine twigs, Sikkim, 11,000 ft. (Hooker f.).
- hookeri* Berk. (57, No. 391; Sacc. V:514). In copse-wood, on moss, Khasi Hills, 5,000 ft. (Hooker f.).
- iridescens* Berk. (57, No. 319; not in Sacc.). On mossy banks, Sinchul, Sikkim Himalaya, 8,000 ft. (Hooker f.).
- korthalsii* Fr. (240:30; Sacc. V:518). On chips, Nicobar Islands (Kamphoevener).
- Planguidus* (Lasch) Fr. (Sacc. V:527; 260:152). On dead stems, Botanic Garden, Saharanpur (Gollan).

- [*Marasmius*] *parishii* Cke (149:122; Sacc. V:545). On grass, palm petioles, etc., Burma (?Parish).
- *proletarius* Berk. & Curt. (Sacc. V:555). Reported from Narcondam, Andaman Islands (C. G. Rogers).
- *pulcher* (Berk. & Broome) Petch (377:19; Sacc. VI:673 as *Cyphella*; 497:38). On tea, Assam (Tunstall). This is the common thread blight of tea in Ceylon, and is, according to Petch (377) the species with which Massee found his *Stilbum nanum* (q.v.) associated, and wrongly thought the latter to be its fructification. *M. pulcher* is apparently not parasitic, and the identity of the true parasitic thread blight of tea in India is still unknown. (See 111:456, figs., and *Corticium repens*).
- *ramealis* (Bull.) Fr. (Sacc. V:531; 263:328). On dead roots, Botanic Garden, Saharanpur (Gollan).
- *rotula* (Scop.) Fr. (Sacc. V:541; 57, after No. 391; 263:329). On leaves of maple, etc., in pine woods, Sikkim, 11,000 ft. (Hooker f.); on dead grass stems, Botanic Garden, Saharanpur (Gollan). Berkeley notes that the Sikkim form has adnate gills, not attached to a collar.
- *sacchari* Wakker (Sacc. XIV:115; 392:4). On exotic varieties of *Saccharum officinarum*, Mandalay (Rhind).
- *spaniophyllus* Berk. (Sacc. V:568; 467:157). On dead twigs, Khandala, Bombay (Blatter).
- *subomphalodes* P. Henn. (263:329; Sacc. XVII:41). On dead grass, Botanic Garden, Saharanpur (Gollan).
- *urens* Fr. (Sacc. V:504; 263:328). On the ground, Arnigadh, Mussoorie (Gollan).
- Merulius corium* Fr. (Sacc. VI:413). Reported in Saccardo as occurring in India, but a more definite reference was not found.
- *lignosus* Berk. (57, No. 447; Sacc. VI:420). On dead wood, Darjeeling (Hooker f.).
- *pseudolachrymans* P. Henn. (263:328; Sacc. XVII:145). On tree roots, Botanic Garden, Saharanpur (Gollan).
- *similis* Berk. & Broome (Sacc. VI:420; 70, IV:5, figs.). On exposed bamboo roots, Hooghly District, Bengal (Bose).
- Mycena arata* Berk. (57, No. 268; Sacc. V:269). On roots of trees, amongst moss, Sinchul, Sikkim Himalaya, 8,500-9,000 ft. (Hooker f.).
- *bicrenata* Berk. (57, No. 269; Sacc. V:278). On rotten wood, Jallapahar, Darjeeling (Hooker f.).
- *broomeiana* Berk. (57, No. 265; Sacc. V:281). On dead wood, Darjeeling (Hooker f.).
- *colligata* Berk. (57, No. 367; Sacc. V:271). In pine woods, Sikkim, 11,000 ft. (Hooker f.).



- [*Mycena*] *conocephala* P. Henn. (263:334; Sacc. XVII:20). On the ground, Botanic Garden, Saharanpur (Gollan).
- *dentosa* Berk. (57, No. 370; Sacc. V:282). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *discors* Berk. (57, No. 368; Sacc. V:264). On wood in pine forest, Sikkim, 11,000 ft. (Hooker f.).
- *epipterygia* (Scop.) Fr. (Sacc. V:294; 57, after No. 372, as *Agaricus epipterygius* Scop.). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *flavo-miniata* Berk. (57, No. 372; Sacc. V:289). On sticks in pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *galericulata* (Scop.) Fr. (Sacc. V:268; 57, after No. 366, as *Agaricus galericulatus* Scop.). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *gypsea* Fr. (Sacc. V:260; 263:334). On roots, Botanic Garden, Saharanpur (Gollan).
- *incommiscibilis* Berk. (57, No. 369; Sacc. V:281). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *macrothela* Berk. (57, No. 373; Sacc. V:294). Amongst moss in woods, Myrong, Khasi Hills (Hooker f.).
- *manipularis* Berk. (57, No. 274; Sacc. V:272). On trunks and stumps, Sinchul, Himalaya, 8,500 ft. (Hooker f.).
- *myriadea* Berk. (57, No. 266; Sacc. V: 271). On dead trunks, Darjeeling, 8,000 ft. (Hooker f.).
- *nubigena* Berk. (57, No. 267; Sacc. V:269). On old timber, Darjeeling, 7,500 ft. (Hooker f.).
- *plicosa* Fr. (Sacc. V:279; 263:334). On the ground, Botanic Garden, Saharanpur (Gollan).
- *prasia* Berk. (57, No. 275; Sacc. V:284). On the ground, top of Tonglo, Sikkim, 10,000 ft. (Hooker f.).
- *puberula* Berk. (57, No. 371; Sacc. V:284). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *pura* (Pers.) Fr. (Sacc. V:256; 57, after No. 366, as *Agaricus purus* Pers.). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- *rubiaetincta* Berk. (57, No. 270; Sacc. V:291). On tree trunks, Darjeeling, 7,500 ft. (Hooker f.).
- *rufata* Berk. (57, No. 273; Sacc. V:272). On tree trunks, Darjeeling, 8,000 ft. (Hooker f.).
- *rufo-picta* Berk. (57, No. 276; Sacc. V:294). On dead wood, Darjeeling, 8,000 ft. (Hooker f.).
- *russulina* Berk. (57, No. 272; Sacc. V:272). On tree trunks, Darjeeling, 8,600 ft. (Hooker f.).
- *xanthophylla* Berk. (57, No. 271; Sacc. V:272). On roots of trees, Darjeeling, 8,000 ft. (Hooker f.).

- Naucoria cerodes* Fr. (Sacc. V:836; 57, after No. 401). Leh and Valley of the Indus, Kashmir (Thomson).
- ? *conspersa* (Pers.) Fr. (Sacc. V:854; 263:332). On the ground, Botanic Garden, Saharanpur (Gollan).
- descendens* Berk. (57, No. 381; Sacc. V:849). Amongst moss in pine woods, Sikkim, 11,000 ft. (Hooker f.).
- fusispora* P. Henn. (263:332; Sacc. XVII:72). On the ground, Arnigadh, Mussoorie (Gollan).
- khasiensis* Berk. (57, No. 402; Sacc. V:837). Amongst grass, Kala Pani, Khasi Hills, 5,000 ft. (Hooker f.).
- micromegala* Berk. (57, No. 380; Sacc. V:833). On dead wood, Myrong, Khasi Hills (Hooker f.).
- pediades* Fr. (Sacc. V:844; 263:332). On the ground, Botanic Garden, Saharanpur (Gollan).
- scrupea* Berk. (57, No. 290; Sacc. V:851). On moist earth, Darjeeling, 7,500 ft. (Hooker f.).
- semiorbicularis* Bull. (Sacc. V:844). India is included in the distribution as listed in Saccardo.
- Nolanea nana* Massee (319, VI:122; Sacc. XXIII:220). On walls, Calcutta (Burkill).
- Omphalia calycinoides* P. Henn. (263:334; Sacc. XVII:21). On the ground or on roots, Botanic Garden, Saharanpur (Gollan).
- campanella* (Batsch) Fr. (Sacc. V:327; 352). Sonamarg, Kashmir (R. R. Stewart).
- fuliginosa* Massee (319, VI:122; Sacc. XXIII:109). On a wall, Calcutta (Burkill).
- hydrogramma* (Bull.) Fr. (Sacc. V:309; 248:15). Central Provinces and Berar (Graham).
- oedipus* Massee (319, VI:122; Sacc. XXIII:105). On the ground at a base of a wall, Calcutta (Burkill).
- radiatilis* Berk. (57, No. 375; Sacc. V:323). In pine woods, Sikkim, 11,000 ft. (Hooker f.).
- ranunculina* Berk. (57, No. 374; Sacc. V:325). On turf, etc., Lachen, Sikkim, 14-16,000 ft. (Hooker f.).
- rogersi* Massee (319, IV:92; Sacc. XXI:60). On the ground, Narcondam, Andaman Islands (Rogers).
- ? *rustica* Fr. (Sacc. V:316; 260:153). On the ground, Botanic Garden, Saharanpur (Gollan).
- umbellifera* (L.) Fr. (Sacc. V:321; 57, after No. 373, as *Agaricus umbelliferus* L.). In pine woods, Sikkim, 11,000 ft. (Hooker f.).

- Panaeolus campanulatus** (L.) Fr. (Sacc. V:1121; 71:353; 260:152 as *Chalymotta campanulata* (L.) Karst.; 263:329). On the ground, Botanic Garden, Saharanpur (Gollan); on dung, Hooghly District, Bengal (Bose).
- cyanescens** Berk. & Broome (Sacc. V:1123; 71:352, fig.; 70, II). Common in Bengal on dung heaps (Bose). Cultures of this fungus are also reported by Bose (72).
- papilionaceus** (Bull.) Fr. (Sacc. V:1122; 57, after No. 383, as *Agaricus papilionaceus* Bull.). On the ground, Jheels, Plains of Eastern Bengal (Hooker f.).
- Panus conchatus** Fr. (Sacc. V:615; 57, after No. 326). Darjeeling (Hooker f.).
- monticola** Berk. (57, No. 326; not in Sacc.). On the ground, probably attached to wood, Tonglo, Sikkim (Hooker f.).
- ochraceus** Massee (319, IV:92; not in Sacc.). On dead wood, Dehra Dun (Butler).
- Paxillus chrysites** Berk. (57, No. 314; Sacc. V:986). On dead wood, Darjeeling, 7,500 ft. (Hooker f.).
- pinguis** Hooker f. (57, No. 316; Sacc. V:987). On earth and mossy banks, Darjeeling, 7,500 ft. (Hooker f.).
- sulphureus** Berk. (57, No. 315; Sacc. V:986). On dead wood and on the ground, Darjeeling, 7,500 ft. (Hooker f.).
- Peniophora habgallae** (Berk. & Broome) Cke (Sacc. VI:641; 288, No. 58:4, 7, as *Matula poroniaeformis* (Berk. & Broome) Massee; 287:390, figs.). "Maduré", India through Rev. C. Torrend. Petch (380) has solved the relationships of the *Matula*, formerly placed in the Gasteromycetes.
- levigata** (Fr.) Massee (Sacc. VI:628 as *Corticium levigatum* Fr.; 196:127). Yomah, Burma (Kurz).
- Pholiota aurivella** (Batsch) Fr. (Sacc. V:748; 57, after No. 288, as *Agaricus aurivellus* Batsch). On tree stumps, Darjeeling, 7,000 ft., and Tonglo, Sikkim, 5,000 ft. (Hooker f.).
- examinans** Berk. (57, No. 287; Sacc. V:742). On dead wood, Darjeeling (Hooker f.).
- gollani** P. Henn. (263:333; Sacc. XVII:62). On a living trunk of *Tamarindus indica*, Botanic Garden, Saharanpur (Gollan).
- granuloso-verrucosa** P. Henn. (263:333; Sacc. XVII:64). On the ground, Botanic Garden, Saharanpur (Gollan).
- indica** Massee (319, III:151; Sacc. XVII:63). On the ground, Poona (Woodrow).
- microspora** Berk. (57, No. 288; Sacc. V:742). On dead wood, Darjeeling (Hooker f.).
- praecox** (Pers.) Fr. (Sacc. V:738; 263:333 as *P. candicans* (Schaeff.) Schroet.). On the ground, Botanic Garden, Saharanpur (Gollan).
- Pilacre orientalis** Berk. & Broome (67:101; Sacc. IV:580). On dead wood, Nilgiris (E. S. Berkeley).

- [*Pilacre*] *tephrospora* Berk. & Broome (67:101; Sacc. IV:580). On dead leaves, Nilgiris (E. S. Berkeley).
- Pleurotus anserinus* Berk. (57, No. 279; Sacc. V:362). On dead wood, Jallapahar, Darjeeling, 7,500 ft. (Hooker f.).
- *cretaceus* Massee (319, II:165; Sacc. XVI:36; 248:15). On wood, Peshawar (Watt), edible, sold in the Bazaar as "Dhingri"; Central Provinces (Graham).
- *dryinus* (Pers.) Fr. (Sacc. V:340; 57, after No. 401). On trees, near Avantipura, Kashmir (Thomson).
- *eōus* Berk. (57, No. 280; Sacc. V:361). In the hottest valleys, on dead tree trunks in open places, Sikkim (Hooker f.).
- *fimbriatus* Bolt. (Sacc. V:344; 248:15). Central Provinces and Berar (Graham).
- *flabellatus* Berk. & Broome (Sacc. V:369; 71:349, figs.). On dead wood or on the ground, Hooghly District, Bengal (Bosc).
- *hapalosclerus* Berk. (57, No. 277; Sacc. V:351). On tree trunks, Darjeeling, 7-8,000 ft. (Hooker f.). The species name is spelled "*apalosclerus*" in the original description.
- *membranaceus* Massee (319, III:151; Sacc. XVII:24). On trunks, Poona (Woodrow).
- *ninguidus* Berk. (57, No. 281; Sacc. V:361). In hot valleys on dead timber, Sikkim (Hooker f.).
- *ostreatus* (Jacq.) Fr. (Sacc. V:349; 352). Sonamarg, Kashmir (R. R. Stewart).
- *petaloides* (Bull.) Fr. (Sacc. V:361; 57, after No. 401). On dead wood, East Nepal (Hooker f.).
- *placentodes* Berk. (57, No. 376; Sacc. V:359). On birch wood, Sikkim, 11,000 ft. (Hooker f.).
- *platypus* Cke & Massee (169:121; Sacc. IX:47). On trunks, Nepal.
- *salignus* (Pers.) Fr. (Sacc. V:359; 57, after No. 401). Sikkim (Hooker f.).
- *sapidus* Kalchbr. (Sacc. V:348; 248:15). Central Provinces and Berar (Graham).
- *subpalmatus* Fr. (Sacc. V:343; 263:334). On the ground, perhaps on roots, Arnigadh, Mussoorie (Gollan).
- *verrucarius* Berk. (57, No. 278; Sacc. V:351). On dead wood, Darjeeling, 7-8,000 ft. (Hooker f.).
- Pluteus chrysoprasius* Berk. (57, No. 283; Sacc. V:678). On burnt roots of *Abies*, base of Mount Tongle, Sikkim, 7,000 ft. (Hooker f.).
- *cuspidatus* Berk. (57, No. 377; Sacc. V:677). On the ground, Khasi Hills (Hooker f.).
- *palmibinus* Berk. (57, No. 282; Sacc. V:677). On living tree trunks, Darjeeling, 7,500 ft. (Hooker f.).
- Polyporus acervatus* Lloyd (287:1126). South India (D. Marudra Rajan).

- [*Polyporus*] *adustus* (Willd.) Fr. (Sacc. VI:125; 286:134; 57, after No. 421; 288, No. 33:4, No. 34:2, No. 69:5; 300:328; 287:955; 352 as "*Bjerkandera adusta*"; 70, VIII:30 as *P. dissitus* Berk. & Broome; 84:224). Nilgiris (Perrottet, a good specimen at Paris); Sikkim, 7,000 ft. (Hooker f.); Sonamarg, Kashmir (R. R. Stewart); India (Cave); on dead date palm trunk, Kadambagachi, Bengal (Bose).
- *albellus* Peck (287:1126; 296:130). South India (D. Maruda Rajan).
- *anthelminticus* Berk. (60:753; Sacc. VI:79; 70, VIII:30). At the base of bamboo stems, Burma; on dead root of bamboo, Bengal (Bose). Vernacular names "wa-mo", "ihan-mo". Said by Berkeley to be near *P. rufescens* (q. v.).
- *aquosus* P. Henn. (Sacc. XVII:112; 296:130). India (Cave). Lloyd (288, No. 32:1) states that this is the same as *P. lenzitoides* Berk., but Bresadola (84:235) considers it to be quite different from "*Polyporus lenziteus* Berk." presumably meaning *P. lenzitoides* Berk.
- *arcularius* (Batsch) Fr. (Sacc. VI:67; 349:22; 263:326; 287:1126; 70, IX:36). India (? Perrottet); on dead twigs, Arnigadh, Mussoorie (Gollan); South India (D. Maruda Rajan); on the ground and on a fallen branch, Barkuda Island, Orissa (Bose, who reports it as *P. agariceus* Berk., with *P. arcularius* given as a synonym. These two names are usually given as synonyms, although Bresadola (82:222) states that *P. agariceus* Berk. is a synonym of *P. boucheanus* Klot.). See *P. cremoricolor* and *P. squamoso-maculatus*.
- *bambusicola* P. Henn. (263:326; Sacc. XVII:111). On roots of bamboo, Botanic Garden, Saharanpur (Gollan).
- *bicolor* Jungh. (Sacc. VI:207 as *Fomes*; 196:124 as *P. anebus* Berk.; 70, V:20, figs.; 287:1010; 84:222). On wood, Tonkyeghat, Pellowa, Burma (Kurz); Bengal, Assam, and Madras (Bose). Lloyd (300:338) also considers *P. anebus* to be the same as *P. bicolor*.
- *bosei* Bres. (85:55). On trunks, Bakarganj, Calcutta District (Bose).
- *brumalis* (Pers.) Fr. (Sacc. VI:63; 70, IX:35). On a prostrate log, Chilka Lake, Orissa (Bose).
- *calcuttensis* Bose (80:179, figs.). In a cavity in the trunk of *Caesalpinia pulcherrima*, Calcutta (Bose).
- *campbelli* Berk. (57, No. 488; Sacc. VI:61; 240:32). On the ground, Poona (J. D. Campbell). Lloyd (295:89) states that this species is "only known from a thin section. Probably could not be determined on comparison."
- *chocolatus* Bose (77:226, fig.; 287:1186, 1194, fig.). On the ground, Coimbatore, Madras (Bose).
- "*clementsii*" (287:1069). India (Bose). We are uncertain as to the interpretation of Lloyd's reference. *P. clementiae* Murr. is stated by Bresadola (84:67) to be a synonym of *P. vernicipes* Berk. *P. clementiae* (Murr.) Sacc. & Trott. (Sacc. XXI:272) may be intended.

- Polyporus**] *cremoricolor* Berk. (57, No. 334; Sacc. VI:71; 263:326). On decayed wood, Darjeeling, 7,000 ft. (Hooker f.); on dead twigs, Arnigadh, Mussoorie (Gollan). Lloyd (296:176) includes this as close to, if not the same as, *P. arcularius*.
- crispus* (Pers.) Fr. (Sacc. VI:125; 57, after No. 338). On dead wood, Darjeeling, 7-8,000 ft., and Tonglo, Sikkim, 8,000 ft. (Hooker f.).
- cubensis* Mont. (Sacc. VI:146; 467:155). On wood, Dehra Dun (Blatter).
- curtisii* Berk. (Sacc. VI:158 as *Fomes*; 288, No. 42:3). India (Prof. D. E. Bashambar).
- digitalis* Berk. (57, No. 422; Sacc. VI:123). On dead wood, Darjeeling, 7,500 ft. (Hooker f.). Lloyd (300:377) states that the types are very poor, but look much like *P. adustus*.
- elatinus* Berk. (57, No. 424; Sacc. VI:141; 300:295). On pine, East Nepal and Sikkim (Hooker f.).
- emerici* (Berk. in Herb.) Lloyd (Sacc. IX:195 as *Trametes emerici* Berk. in Herb.; 288, No. 40:5; 70, III:2, figs.; 296:137). On trunks, Nilgiris; on dead wood, Hooghly, Bengal (Bose). Lloyd (288, l. c.) states that it is related to *P. gilvus*.
- flammans* Berk. (57, No. 421; Sacc. VI:103). On dead wood, Darjeeling, 7,500 ft. (Hooker f.). The type was re-examined by Lloyd (300:378).
- friabilis* Bose (75:300, fig.; 287:1010, 1148, fig.). On the ground, Bengal and Orissa (Bose).
- fumoso-olivaceus* Lloyd (70, V:20, figs.; 373, II:284; 287:1010). On tree trunks, Howrah, Bengal (Bose).
- gilvus* Schwein. (Sacc. VI:121; 260:151; 70, II:138, figs.; 300:346; 288, No. 42:12, No. 47:2; 287:1295; 252; 57, after No. 339, as *P. isidioides* Berk.; 467:155; 51:393 as *P. cupreus* Berk.; 84:224). On dead wood, Darjeeling (Hooker f.); Khandala, Bombay (Blatter); India (Wight; J. Ray; Bashambar; P. L. Dey); on a dead trunk of *Shorea robusta*, Kalsia (J. H. Blandford); a suspected parasite of *Dalbergia sissoo*, Dehra Dun (Hafiz Khan); Hooghly District, Bengal, and Darjeeling (Bose). See also *Fomes holosclerus* and *P. inamoenus*.
- grammocephalus* Berk. (Sacc. VI:92; 148:98; 260:151; 467:156; 372:36; 70, IV:1, figs.; 435:71; 287:1125, 1126). On stems in dense forest, Kalsia (J. H. Blandford); on dead trunks, Poona (Blatter); Hooghly, Bengal (Bose); on dead wood, Sidapur, Coorg (435); South India (Maruda Rajan); India (H. V. Ryan); Andaman Islands (Kurz).
- guhae* Bose in Lloyd (287:1147, fig., 952, 1010). India (Bose).
- haematinus* Berk. in Herb. (Sacc. VI:149, a nomen nudum according to Lloyd, 300:379). India.
- hispidus* (Bull.) Fr. (Sacc. VI:129; 263:326; 111:21, figs.; 98:14, fig.; 287:1295, 1330, as *P. subhispidus*). On dead tree roots, Botanic Garden, Saharanpur

- (Gollan); on living trunks of *Morus*, *Pyrus malus*, *Prunus armeniaca*, and plum trees, Kashmir (Butler); India (P. L. Dey).
- [**Polyporus**] **hobsoni** (Berk.) Cke (163:20; Sacc. VI:135). On dead wood, Bombay. Lloyd (300:325, 380) thinks that this is *P. obtusus* Berk.
- hookeri** Lloyd (300:384, fig.; Sacc. XXIII:366; 70, IX:37; 57, after No. 430, as a form of *P. scruposus* Fr.). Ratong River, 7,000 ft. (Hooker f.); on dead trunk, Darjeeling (Bose). Lloyd (l. c.) agrees with Berkeley that this is only an extreme form of *P. scruposus*.
- ikenoi** ?Lloyd (287:1125). India (D. Maruda Rajan).
- illicicola** P. Henn. (Sacc. XVII:110; 288, No. 69:5). India (G. H. Cave). Lloyd writes *P. "illicicolor"*, but presumably he means this species.
- inamoenus** Mont. (349:22; Sacc. VI:191 as *Fomes*). Nilgiris (Perrottet). This specimen is in Herb. Montagne at Paris. Lloyd (300:381) considers it to be *P. gilvus*, but Bresadola (84:237) is not of the same opinion.
- intybaceus** Fr. (Sacc. VI:96; 57, after No. 338). On dead wood, Darjeeling, 7-8,000 ft. (Hooker f.). A doubtful record; Saccardo (VI:280) refers an earlier reference of Berkeley to this species to *Polystictus cichoriaceus* Berk.
- luteo-umbrinus** Romell (Sacc. XVI:149; 70, VIII:29; 319, XI:250 as *P. indicus* Massee; 84:67; 296:162, fig.). On the ground, probably attached to buried wood or roots, Baroda (B. Cavanagh); on dead *Heritiera minor* tree, Madras (Bose).
- luzonensis** Murr. (Sacc. XXI:283 as *Fomes*; 73:130, figs.; 287:1069). On dead branch of *Ficus bengalensis* and on logs, Bengal (Bose).
- manilaensis** Lloyd (287:1131, 1126). South India (D. Maruda Rajan).
- medullaris** Berk. (57, No. 425; Sacc. VI:140). On rotten wood, Bihar (Hooker f.). Lloyd (299:282) states that no type exists, but suggests that it may have been a *Ganoderma*.
- miniatus** Jungh. (Sacc. VI:90; 57, No. 338 as *P. rubricus* Berk.; 84:227). Tonglo, Sikkim, 7,000 ft. (Hooker f.). Lloyd (288, No. 37:3) considers *P. miniatus* to be a thin form of *P. sulphureus*.
- molliculus** Bres. (83:33; Sacc. XXIII:352). On trunks, "India or., comm. C. G. Lloyd, No. 149".
- montanus** (Qué.) Ferry (Sacc. XXI:260; 288, No. 49:4). India (Cave).
- nigrocrustus** Lloyd (300:373; Sacc. XXIII:366; 288, No. 38:8 erroneously referred to *Fomes nigrolaccatus*). Dodabetta, Nilgiris (H. V. Ryan).
- nodipes** Berk. (57, No. 415; Sacc. VI:57). On the ground, Khasi Hills (Hooker f.). Lloyd (295:90) states that no type exists.
- ochroleucus** Berk. (Sacc. VI:145; 70, IV:1, figs.; 300:311, figs.). On dead wood, Calcutta (Bose).
- oerstedii** Fr. (Sacc. VI:178 as *Fomes*; 300:370, fig.; 288, No. 53:4 as "*Ganoderma oerstedii*"). India (W. E. Houghton).

- [*Polyporus*] *ostreiformis* Berk. (Sacc. VI:110; 70, IV:1, figs.; 300:307). Common on trunks, Bengal (Bose).
- *patouillardii* Rick (Sacc. XXI:311 as *Polystictus*; 287:1186, 1207, 1266). India, associated with a *Ptychogaster* (Bose); India (D. Maruda Rajan).
- *picipes* Fr. (Sacc. VI:83; 196:122; 288, No. 38:8; 352). Royal Botanic Garden, Calcutta, and Sikkim (Kurz); Sonamarg, Kashmir (R. R. Stewart); India (H. V. Ryan).
- *platyporus* Berk. (57, No. 337; Sacc. VI:83). On dead timber, Darjeeling, 8,000 ft. (Hooker f.). Lloyd (296:162) found the type very scanty, but he thinks it is the same as *P. rufescens* form *heteroporus*.
- *plorans* (Patouill.) Sacc. & D. Sacc. (Sacc. XVII:110; 288, No. 42:3). India (Prof. D. E. Bashambar). Lloyd (300:364) was in some doubt as to the identity of the specimens.
- *resinosus* (Schrad.) Fr. (Sacc. VI:137; 263:325; 300:384). On dead roots, Botanic Garden, Saharanpur (Gollan).
- *rhodophaeus* Lév. (Sacc. VI:175 as *Fomes*; 435:71; 287:1266, 1290; 70, VIII:29 as *P. semilaccatus* Berk.; 84:277; 435:70; 287:1126; 196:124, fig., as *P. cinereo-fuscus* Currey; 84:223). Nakawa, Toukyeghat, Burma (Kurz); on dead wood, Sidapur, Coorg, and Dhoni forests, Madras (435); South India (D. Maruda Rajan); on dead *Heritiera minor*, Sundribuns and Madras (Bose). Lloyd (296:129; 300:385) also considered *P. semilaccatus* as a synonym, but later (287:1290) preferred to use the latter name for forms with dark pores.
- *rubidus* Berk. (Sacc. VI:137; 196:123, figs.; 287:955; 296:133). Burma (Kurz); India (Cave). Lloyd (296:191) is uncertain whether this is distinct from *Polystictus modestus* (q. v.).
- *rufescens* Fr. (Sacc. VI:78; 57, after No. 335). On dead wood, Darjeeling and Jallapahar, 3-5,000 ft. (Hooker f.). See also *P. anthelminticus*.
- *rugosus* Nees (Sacc. VI:152 as *Fomes*; 57, after No. 415; 372:4; 296:110). Khasi Hills (Hooker f.).
- *rugulosus* Lév. (Sacc. VI:168 as *Fomes*; 287:952, 1126, 1266 as *P. rigidus* Lév.; 435:70). India (Bose); South India (D. Maruda Rajan); on dead wood in Dhoni forests, Malabar (435). Lloyd (287:1078; 300:337) considers *P. zonalis* as well as *P. rugulosus* to be the same as *P. rigidus*; we have followed Bresadola (84:227).
- *rutilans* (Pers.) Fr. (Sacc. VI:119; 287:1186). India (Bose).
- *saharanpurensis* P. Henn. (263:325; Sacc. XVII:108). On the ground near tree roots, Botanic Garden, Saharanpur (Gollan). Lloyd (296:162) did not find the type, but considers the description to indicate *P. schweinitzii*.
- *satpoorensis* Beck (50:146, fig.; Sacc. XI:85). On rotten trunks, Satpoor Range. "The illustration is an excellent picture of *Polystictus leoninus*" (Lloyd, 300:385).



- [*Polyporus*] *schweinitzii* Fr. (Sacc. VI:76; 263:326 as *P. sistotremoides* (Alb. & Schw.) Schroet.). On the ground, Botanic Garden, Saharanpur (Gollan). Recorded also by Saccardo as from the Himalaya. See *P. saharanpurensis* and *P. tabulaeformis*.
- *scopulosus* Berk. (57, No. 429; Sacc. VI:201 as *Fomes*; 296:128, fig., 190; 287:952, 996; 391:139, figs., as *Trameles rhizophorae* Reichardt). On dead wood, Darjeeling (Hooker f.); in Bengal (Hutchings); India (Bose); on *Rhizophora* trunks, near Car-Nicobar, Nicobar Islands. Lloyd (296:128) states that this is a lignicolous *Polyporus*, or might be classed as a *Trameles*.
- *scruposus* Fr. (Sacc. VI:121; 57, after No. 430; 288, No. 49:3; 196:124; 263:325 as *P. gilvus* Schw. var. *scruposus* Fr.). Iwa River, East Nepal and Sone River, Bihar (Hooker f.); Martaban Hills (Kurz); on dead trunks, Arnigadh, Mussoorie (Gollan); India (Cave). Lloyd (300:347) considers this to be only an excessively rough form of *P. gilvus*. See also *P. hookeri*.
- *secernibilis* Berk. (Sacc. VI:102; 70, III:3, figs., 288, No. 49:4). On dead wood, Darjeeling, 7,000 ft., and Hooghly, Bengal (Bose); India (Cave). Lloyd (300:329) places this species near *P. adustus*.
- *shoreae* Wakefield (Sacc. XXIII:358, authors erroneously listed as "Wakefield et Grove"; 70, V:21, figs.; 111:98, fig.; 113 (7):53; 113 (8):53; 113 (9):64; 247). On living trunks of *Shorea robusta*, Bengal (Shaw; Bose; McCrie; Hole; Glasson).
- *squamoso-maculatus* Sacc. (Sacc. IX:161; 57, No. 336 as *P. maculatus* Berk., not Peck). On trunks of living trees, Darjeeling, 8,000 ft. (Hooker f.). Lloyd (296:176) lists this as close to, or identical with, *P. arcularius*.
- *squamosus* (Huds.) Fr. (Sacc. VI:79; 57, after Nos. 336 and 416; 260:151). On dead wood, Darjeeling, 7,500-8,000 ft. (Hooker f.); Panzi, North-western Himalaya (Marten).
- *subvirgatus* Lloyd (296:172; 288, No. 32:1). India (Cave).
- *sulphureus* (Bull.) Fr. (Sacc. VI:104; 57, after No. 338; 352 as "*Lactiporus sulphureus*"). Tonglo, Sikkim (Hooker f.); Sonamarg, Kashmir (R. R. Stewart). See also *P. miniatus*.
- *tabulaeformis* Berk. (57, No. 78 and after No. 415; Sacc. VI:76 misprinted "*tubulaeformis*"). On dead wood, Darjeeling, 7,500 ft. (Hooker f.). Lloyd (296:162) considers that this name, as applying to the type from the United States of America, refers to *P. schweinitzii*.
- *turboformis* Lloyd (296:194, fig.; Sacc. XXIII:371). Baroda (Krumbiegel). Lloyd does not give the habitat, but Saccardo says "ad truncos".
- *umbellatus* Fr. (Sacc. VI:95; 352 as "*Grifola umbellata*"). Sonamarg, Kashmir, "a favourite edible species" (R. R. Stewart).
- *umbilicatus* Berk. (57, No. 335; Sacc. VI:68; 467:156). On dead wood, Tonglo and Sinchul, Sikkim Himalaya, 8,000 ft. (Hooker f.; part of the material also

- in Herb. Montagne); St. Xavier's College, Bombay (Blatter). Lloyd (296:171) states: "Close to *brunalis* but more smooth and rigid."
- [*Polyporus*] *ungulatus* Berk. var. *hobsoni* Sacc. (62:165; Sacc. VI:142). Bombay (Hobson).
- *vallatus* Berk. (57, No. 419; Sacc. VI:77; 84:235; 296:162). On the ground, Khasi Hills (Hooker f.).
- *varius* Fr. (Sacc. VI:84; 288, No. 49:4). India (Cave).
- *versiformis* Berk. (57, No. 417; Sacc. VI:81). On dead wood, Sikkim (Hooker f.). Lloyd (296:188) records that this species is based on two small specimens, one of which seems to be *P. melanopus*, the other apparently different.
- *vivax* Berk. (57, No. 423; Sacc. IX:171 and XI:84). On dead wood, East Nepal (Hooker f.). Lloyd (296:148) states that *P. "virax"* (error for *vivax*) seems to be the same as *P. liebmanni* Fr.
- *zonalis* Berk. (Sacc. VI:145; 57, after No. 339; 260:151; 70, III:3, figs.; 300:336; 287:1069). On dead wood, Darjeeling, 7,000 ft. (Hooker f.); Hooghly, Howrah, and Darjeeling (Bose); on dead trunk of *Cedrela toona*, Kalsia (J. H. Blandford). See *P. rugulosus*.
- Polystictus aethiops* Cke (148:99; Sacc. VI:284). On bark, India. Lloyd (300:375) notes that the type specimens cannot be accepted as representing a species.
- *affinis* Nees (Sacc. VI:219; 196:122; 472:152; 288, No. 28:2, No. 60:6; 294:53, 57; 296:142, fig.; 287:1126; 435:73; 70, VIII:31, figs.). Yomah Range and Karen Country, Burma (Kurz); on dead wood, Coorg (435); Bengal (Hutchings); India (P. D. Master); South India (D. Maruda Rajan); on fallen trunk of *Terminalia arjuna*, Midnapur, Bengal (Bose); also recorded for Nicobar Islands. See *P. squamiformis*.
- *asper* Jungh. (Sacc. VI:224; 196:124, figs., erroneously as *Polyporus xerophyllaceus* Berk.; 163:21 as *Fomes curreyi* Berk. in Herb.; 148:98 as *P. curreyi* Berk.; 299:279 as "*Trametes strigata*"; 84:224, 227). On old logs, Botanic Garden, Calcutta and Andaman Islands (Kurz).
- *badius* Berk. (Sacc. VI:281; 288, No. 28:3; 70, IV:4, figs., as *Trametes badius* Berk.; 287:1010). On old logs, Bengal (Hutchings); Assam and Bengal (Bose). Lloyd (288, No. 28:3) states that the Indian specimens are more like the type at Kew than Philippine specimens similarly named.
- *beharensis* Berk. (57, No. 438; Sacc. VI:289). On dead wood, Sone River, Bihar (Hooker f.). Lloyd (287:1145) notes that *P. glabro-rigens* may be the same as *P. beharensis*, but the type of the latter is too poor to decide.
- *berkeleyi* Bres. (Sacc. VI:369 as *Hexagonia pergamenea* Berk. & Broome, not *Polystictus pergameneus* Fr.; 70, V:22, fig.; 287:1610). On dead wood, Hooghly District, Bengal (Bose). Bose states that this is more a *Hexagonia* than a *Polystictus*.

- [*Polystictus*] *caperatus* Berk. (Sacc. VI:282; 57, after No. 432; 70, IV:2; 287:1032, fig.; 287:1126 as *P. phocinus* Berk.; 84:226). On dead wood, Parasnath, Bihar (Hooker f.); Hooghly, Bengal (Bose); South India (D. Maruda Rajan).
- *cervino-gilvus* Jungh. (Sacc. VI:288; 70, VIII:27; 288, No. 33:2 as *P. dermatodes* Lév.; 67:51 as *P. peradeniyae* Berk. & Broome; 84:224, 226). On fallen branches, Nicobar Islands; Nilgiris; India (Kirtikar); Chittagong (Bose). See also *P. zeylanicus*.
- *cichoriaceus* Berk. (Sacc. VI:280; 287:955; 294:62). India (Cave). See *Polyporus intybaceus* and *P. setiporus*.
- *cineraceus* Lév. (286:139; Sacc. VI:261). On trunks, Nilgiris (Perrottet). The type was not found at Paris, but a specimen marked *P. cineraceus*, not from India, is in Herb. Montagne with a note that it is perhaps a form of *P. adustus*. Lloyd (296:146) did not find a type.
- *cinerescens* Schwein. (Sacc. VI:285; 196:124). On wood, Yomah, Burma (Kurz).
- *cingulatus* Fr. (Sacc. VI:268). Recorded in Saccardo as occurring in India.
- *cinnabarinus* (Jacq.) Fr. (Sacc. VI:245; 57, after No. 430; 196:124; 352 as "*Pycnoporus cinnabarinus*"; 51:387 as *Polyporus cristula* Klotzsch; 70, IV:3, fig., as *Trametes cinnabarina* (Jacq.) Fr.). On dead wood, East Nepal (Hooker f.); on old logs, Royal Botanic Garden, Calcutta (Kurz); Sonamarg, Kashmir (R. R. Stewart); on rotten bamboos (in India?; Wight); on trunks, Howrah (Bose). Lloyd (296:144) considers *P. cinnabarinus* to be limited to temperate regions, and *P. sanguineus* the corresponding species of the tropics.
- *cinnamomeus* Jacq. (Sacc. VI:210; 287:1295; 472:152; 296:164). India (P. L. Dey). See also *P. oblectans* var. *lahorensis* Lloyd (288, No. 65, Note 526). India (Kashyap).
- *coriaceus* Lév. (286:137; Sacc. VI:270). On trunks, Nilgiris (Perrottet). Type not found at Paris.
- *cumingii* Berk. (Sacc. VI:209; *P. garckeianus* P. Henn. in Sacc. IX:181; 84:224). On trunks, Mergui, ? Burma (or ? Chile) (T. Philippi). See *P. nilgheriensis*.
- *elongatus* Berk. (Sacc. VI:231; 57, after Nos. 339 and 433; 288, No. 49:4, 11). On wood, forming large masses, Jallapahar and Lebong (7,000 ft.). Darjeeling, and a velvety form, Parasnath (Hooker f.); Darjeeling (Cave). "Merely the tropical form of the common *Polystictus pergamenus* of temperate America" (Lloyd, 288, Note 125).
- *feei* Fr. (Sacc. VI:244; 196:124). Yomah, Burma (Kurz). Lloyd (288, No. 32:3; 299:226) considers this a tropical American plant similar to *Trametes carnea*.
- *fibula* Fr. (Sacc. VI:239; 70, VIII:31 as *P. vellereus* Berk.; 84:228). On root of dead bamboo, Bengal (Bose).

- [Polystictus] flabelliformis** Klotzsch (Sacc. VI:216; 57, after Nos. 337 and 420; 51:386; 196:122; 288, No. 27:3). On dead wood, Darjeeling and Lebong, 4-8,000 ft. (Hooker f.); Yomah Range, Burma (Kurz); Bengal (Hutchings); Ootacamund (Perrottet).
- **flavidus** Berk. (57, No. 432; Sacc. VI:278). On dead wood, East Nepal (Hooker f.).
- **floccosus** Jungh. (Sacc. VI:250; 288, No. 32:3, No. 60:6; 287:1266; 435:72). India (Kirtikar; P. D. Master; D. Maruda Rajan); on dead wood in Dhoni forests, Madras (435). Lloyd (287:1036) decided later that the specimens sent by Kirtikar and Master were *P. zeylanicus*.
- **floridanus** Berk. (Sacc. VI:251; 467:156). A form on wood, Dehra Dun (Blatter).
- **gallo-pavonis** Berk. & Broome (Sacc. VI:234; 288, No. 27:3). Bengal (Hutchings). Lloyd (288, No. 65:16) notes that this species is intermediate between *Polyporus* and *Polystictus*.
- **gaudichaudii** Lév. (Sacc. VI:233; 288, No. 49:4; 296:134, fig.). India (Cave). Bose (70, VIII:28) includes this name as a synonym of *P. thwaitesii*, and the latter name is considered by Bresadola (84:227) to be a synonym of *P. menziesii* (q. v.).
- **gleadowii** Massee (319, III:152; Sacc. XVII:130). On dead wood, Dehra Dun (Gamble). Bresadola (85:29) says this is *P. tephroleucus*.
- **gollani** P. Henn. (263:327; Sacc. XVII:130). On trunks of *Terminalia tomentosa*, Siwalik Range (Gollan).
- **gratus** Berk. (57, No. 436; Sacc. VI:264). On the ground, doubtless attached to wood, Himalaya (Hooker f.). Lloyd (300:379) says the type seems the same as *P. floriformis* Quéf.
- **hasskarlii** Lév. (Sacc. VI:280). Recorded in Saccardo as occurring in Nilgiris, but no other reference found. No Indian specimens were found at Paris.
- **hirsutus** Fr. (Sacc. VI:257; 57, after No. 339; 288, No. 28:2, No. 31:2). On dead wood, Darjeeling, 4,000 ft. (Hooker f.; part of this collection sent by Berkeley to Montagne); Bengal (Hutchings); India (Cave). See *P. steinhilanus*.
- **hutchingsii** Lloyd (287:1316, fig.). Bengal (Hutchings).
- **hypothecus** Kalchbr. (Sacc. VI:263; 70, VIII:31, fig.). Bengal (Bose). Previously known from Australia.
- **inquinatus** Lév. (286:140; Sacc. VI:270; 288, No. 60:7). On trunks, Nilgiris (Perrottet); North-west Himalaya, 6,500 ft. (W. T. Saxton). The type at Paris consists of one pileus in good condition.
- **lanatus** Fr. (239:490; Sacc. VI:274). India.
- **leoninus** Klotzsch (274:486; 51:390; Sacc. VI:235; 467:156; 287:1125; 70, II:140, figs.; 57, after No. 422, as *P. funalis* Fr.; 196:123; 263:327; 288, No. 37:3). On trunks, India (Wight); Sone River (Hooker f.); Mutlah,

Bengal (Kurz); Hooghly District, Bengal (Bose); Botanic Garden, Saharanpur (Gollan); Anand, Bombay (Blatter); India (D. Maruda Rajan). See also *P. satpooensis* and *Hydnium gleadowii*.

[*Polystictus*] *henoides* Mont. (Sacc. VI:281; 57, after No. 339; 70, III:2, figs.; 288, No. 34:2). Simchul, Sikkim, 8,000 ft. (Hooker f.); on dead wood, Darjeeling (Bose); India (Cave). Lloyd (300:349) considers it a pronounced, tropical form of *P. gilvus*.

—*luteus* Blume & Nees (Sacc. VI:218). Recorded by Saccardo as occurring in the Nicobar Islands, presumably from Cooke's reference regarding the distribution of this species, given in the report of the "Challenger" expedition 1885. No Indian specimen was found at Kew, nor a more definite record of a collection from the Nicobar Islands.

—*malaiensis* Cke (Sacc. VI:227 as *P. "malaccensis"* Cke; 287:1125 as "*Polyporus maliensis*"). South India (D. Maruda Rajan).

—*membranaceus* (Swartz) Berk. (Sacc. VI:287; 349:22 as *Polyporus flabellum* Mont.; 84:224). Ootacamund, Nilgiris (Perrottet). There are two specimens in the general Herbarium, Paris.

—*menziesii* Berk. (Sacc. VI:226; 288, No. 69:5; 70, VIII:28, figs., as *P. thwaitesii* Berk. & Broome; 84:227). India (Cave); on dead timber and log of *Excoecaria agallocha*, Calcutta, and Sundribuns (Bose). See *P. gaudichaudii*.

—*meyenii* Klotzsch (Sacc. VI:261; 287:1126, and 1186 as "*Trametes meyenii*"). South India (D. Maruda Rajan); India (Bose). See *T. obstinata*.

—*modestus* Kunze (Sacc. VI:226; 196:122). Yomah Range, Burma (Kurz). See *Polyporus rubidus*.

—*nepalensis* Berk. (57, No. 434; Sacc. VI:228; 57, No. 485 as *Polyporus corium* Berk.; 84:223). On dead wood, Nangki, East Nepal, 10,000 ft., and Sikkim, 12,000 ft. (Hooker f.). Types discussed by Lloyd (296:145; 300:377; 287:951).

—*nilgheriensis* Mont. (349:22; Sacc. VI:231; 57, after Nos. 339 and 433; 70, V:20, figs.; 300:357, figs.; 287:1010). On old trunks, Nilgiris (Perrottet); East Nepal and Darjeeling (Hooker f.); Darjeeling (Bose). Lloyd (300:357) considers this species to be a lignescent *Polyporus*, resembling a *Fomes*. He (l.c.:379) calls *P. garckeianus* P. Henn. a synonym, but we have followed Bresadola who includes *P. garckeianus* with *P. cumingii* (q.v.). Type specimens of *P. nilgheriensis* are at Paris, also specimens marked "Sikkim" which were probably sent to Montagne by Berkeley.

—*oblectans* Berk. (Sacc. VI:211; 57, after Nos. 335 and 415; 263:327). On dead wood and on the ground, Sikkim, 7,500 ft., and Churra, Moflong, and Nunklow, Khasi Hills (Hooker f.); Siwalik Range (Gollan). Lloyd (296:164) considers this an Australian species related to *P. cinnamomeus*.

—*occidentalis* Klotzsch (Sacc. VI:274; 196:125; 263:327; 70, III:3, figs.; 287:952, 1069, 1126; 407:156, forms *resupinata* and *tenuis*, the latter per-

- haps *P. gibberulosum*). On old wood, Royal Botanic Garden, Calcutta (Kurz); Arnigadh, Mussoorie (Gollan); Bandra and Bombay (Blatter); Bengal and Assam (Bose); South India (D. Maruda Rajan).
- [*Polystictus ozonioides* Berk. (57, No. 339; Sacc. VI:236; 57, after No. 443, as *Trameles ozonioides* Berk.). On dead wood, Darjeeling, and on charred wood, Lebong, 6,000 ft. (Hooker f.).
- parishii* Berk. in Herb. (163:51; Sacc. VI:263; 288, No. 69:5, 11). On trunks, Moulmein, Burma; India (G. H. Cave). A form of *P. versicolor*, according to Lloyd (l.c.).
- pectunculus* Lév. (286:138; Sacc. VI:261). On trunks, Nilgiris (Perrottet). The type is in good condition at Paris. No other specimens of this species were found there.
- perennis* (L.) Fr. (Sacc. VI:210; 70, IX:38, figs.; 352 as "*Coltricia perennis*"). On the ground, Shillong (Bose); Sonamarg, Kashmir (R. R. Stewart).
- pergamenus* Fr. (Sacc. VI:242; 288, No. 38:8). India (H. V. Ryan). Bresadola (84:226) considers *P. pergamenus* Fr. to be "*P. prolificans* Fr., juvenilis." See *P. elongatus*.
- persoonii* Fr. (Sacc. VI:272; 196:123; 467:155; 70, III:4, figs.; 288, No. 28:2, No. 34:2, No. 61:8, No. 65:4, 8; 287:1126; 274:481 as *Daedalea sanguinea* Klotzsch; 51:381; 57, after No. 443). Nakawa, Toukyeghat, Burma (Kurz); on dead wood, India (Wight); East Nepal (Hooker f.); Andheri, Bombay (Blatter); Bengal and Assam (Bose); Bengal (Hutchings); South India (D. Maruda Rajan); India (Cave; Kashyap). Lloyd (288, No. 42:10) notes that when thin it is a *Polystictus* and when thick a *Trametes*.
- pictilis* Berk. (57, No. 433; Sacc. VI:255). On dead *Betula*, East Nepal, 12,000 ft. (Hooker f.).
- pinsitus* Fr. (Sacc. VI:262; 196:124; 286:136; 349:22 as *Polyporus setosus* Mont.). Nilgiris (Perrottet); Nattoung Range, Burma (Kurz); India (Jacquemont). Lloyd (287, Polyporoid Issues:27) considers *P. pinsitus* to be confined to America, and the specimens so referred from India to be "abundantly different." Montagne did not include *P. setosus* in his Sylloge, nor is it in Saccardo, and from the fact that the type is included at Paris in the folder with *P. pinsitus*, we infer that Montagne later considered it the same as specimens referred to the latter species.
- polyzonus* (Pers.) Fr. (Sacc. VI:278 and X:188; 288, No. 60:7). North-Western Himalaya, 6,500 ft. (W. T. Saxton).
- proteus* Berk. (Sacc. VI:250; 70, V:21, figs.; 287:1010, 1069). On dead bark of logs, Calcutta (Bose).
- pterygodes* Fr. (Sacc. VI:222; 287:1186; 70, IX:38, figs.). Sylhet (Bose). Lloyd (294:56) regards this as perhaps a sessile form of *P. xanthopus*.
- russogramme* Berk. (Sacc. VI:229; 467:156). On dead wood, Khandala, Bombay (Blatter). Lloyd (296:147) considers the type inadequate.

- [*Polystictus*] *sacer* Fr. (Sacc. VI:213; 111:18, fig.; 70, IX:37, figs.). On the ground, growing from sclerotia, Assam (Butler); Chittagong (Bose). Lloyd (287:1037) considers *P. rhinocerotis* Cke as a small-pored form of this species.
- sanguineus* (L.) Mey. (Sacc. VI:229; 349:22; 57, after No. 337; 196:122; 260:151; 467:156; 70, I:114; 288, No. 27:3, No. 34:2, No. 42:11; 287:1295). Nilgiris (Perrottet: specimen in Herb. Montagne); on dead wood, Darjeeling, 7,000 ft. (Hooker f.); Mutlah, Lower Bengal, Royal Botanic Garden, Calcutta, and Tonglo, Sikkim (Kurz); Bilaspur (Marten); Dehra Dun (Blatter); Calcutta (Bose); Bengal (Hutchings); India (Cave; P. L. Dey; J. Ray). See note under *P. cinnabarinus*.
- sarawacensis* Berk. (Sacc. VI:306 as *Poria*; 68:150). Khandala, Bombay (Blatter).
- sarbadhikarii* Bose (75:301, figs.; 79:138). On dead trunk of *Tamarindus indica*, Hooghly District, Bengal (Bose).
- setiporus* Berk. (57, No. 446 as *Favolus setiporus* Berk.; Sacc. VI:402; 472:153). On dead wood, Nunklow, Khasi Hills (Hooker f.). Lloyd (294:60) considers this to be a form of *P. cichoriaceus* Berk.
- splitgerberi* Mont. (Sacc. VI:234; 196:122). Natoung Hills, Burma, 6-7,000 ft. (Kurz). A doubtful record, for Lloyd (300:355, 386) says that this is the same as *Polyporus rheicolor* Berk., which is confined to the American tropics.
- squamaeformis* Berk. (57, No. 420; Sacc. VI:221; 391:140). On dead wood, Khasi Hills (Hooker f.); Nicobar Islands. Lloyd (294:57) remarks: "No type exists, but specimens so determined by Cooke are small forms of *affinis*."
- steinheilianus* Berk. & Lév. (not in Sacc.; 70, VIII:32, figs.). On a dead branch, Puri, Orissa (Bose). Identified by Bresadola. He first (84:227) gave this as a synonym of *Trametes rigida* Mont. & Berk., but later (84:68) seems to consider it a good species. Bose (l.c.) states "to me it seems a resupinate form of *Polystictus hirsutus*."
- stupeus* Berk. (Sacc. VI:236). On trunks, India. Lloyd (294:65, fig.) states that there is a specimen in Cooke's herbarium marked "India, Herb. Griffith."
- suboccidentalis* Sacc. & Syd. (Sacc. XIV:188; 287:952, 1000, fig., 1010). India (Bose).
- tabacinus* Mont. (Sacc. VI:280; 472:153; 70, II:141, figs.; 288, No. 69:5; 287:1126; 435:74). On dead wood in very moist and shady places, Coorg (435); Darjeeling (Bose); India (G. H. Cave); South India (D. Marudra Rajan).
- tephroleucus* Berk. (57, No. 442 as *Trametes tephroleuca* Berk.; Sacc. VI:275). On dead wood, Nangki, East Nepal, 10,000 ft. (Hooker f.). See *P. gleadowii*.
- tomentosus* Fr. (Sacc. VI:208; 260:152). On wood of *Shorea robusta*, Kalsia (J. H. Blandford).

- Polystictus velutinus* Fr. (Sacc. VI:258; 70, IX:39, figs.). On dead *Alnus nepalensis*, Calcutta and Pashok, Darjeeling (Bose).
- versatilis* Berk. (Sacc. VI:244; 260:151; 472:113; 70, III:1, figs., as *Trametes versatilis* Berk.; 288, No. 28:3). On dead trunks, Bilaspur, Central Provinces (Marten); Hooghly District, Bengal (Bose); Bengal (Hutchings).
- versicolor* (L.) Fr. (Sacc. VI:253; 349:22; 57, after Nos. 339 and 433; 196:124; 263:327; 288, No. 60:7, No. 65:4; 287:1295; 70, II:140, figs.). Nilgiris (Perrottet: specimens at Paris); on wood, Darjeeling, 7,500 ft., Tonglo, Sikkim, 8,000 ft., and Nangki, East Nepal, 9,000 ft. (Hooker f.); Sikkim Himalaya (Kurz); Arnigadh, Mussoorie (Gollan); N. W. Himalaya, 6,500 ft. (W. T. Saxton); India (Kashyap; P. L. Dey); a "new variety" (unnamed), Darjeeling 7,000 ft., and Hooghly, Bengal (Bose).
- villosus* Massee (319, IV:93; Sacc. XXI:311; not *P. villosus* (Swartz) Fr., Sacc. VI:238). On dead branches, Dehra Dun and Mysore (Butler).
- virginicus* Schwein. (Sacc. VI:224; 260:152). On dead wood, Bilaspur, Central Provinces (Marten).
- vittatus* Berk. (Sacc. VI:268; 287:1069 as "*Trametes vittatus*"). India (Bose).
- xanthopus* Fr. (Sacc. VI:215; 349:22; 467:156; 57, after Nos. 335 and 415; 391:140; 288, No. 27:3, No. 31:2, No. 49:3, No. 60:6; 294:51; 435:73; 288:955; 57, No. 416 as *Polyporus florideus* Berk.; 196:121; 196:122, fig., as *Polyporus crassipes* Currey). India (Bélanger) and Nilgiris (Perrottet: good specimens of both collections are in Herb. Montagne); Darjeeling, 7,500 ft., Pimhabania, banks of Sone River, Bihar, and East Nepal (Hooker f.) Burma and South Andaman Island (Kurz); Simla (Blatter); Coorg (435); Bengal (Hutchings); India (Cave; P. D. Master); Nicobar Islands. See *P. pterygodes*.
- xeranticus* Berk. (57, No. 431; Sacc. VI:279). On charred wood, Lebong, Darjeeling (Hooker f.).
- zeylanicus* Berk. (Sacc. VI:271; 467:156; 435:72; 287:1036, 1266). On trunks, Khandala, Bombay (Blatter); Dhoni Forests, Malabar (435); India (D. Maruda Rajan). Petch (367, VII:129-133) considers *P. cervino-gilvus* to be the same, but Lloyd (287:1163) and Bresadola do not agree. See also *P. floccosus*.
- zonatus* Fr. (Sacc. VI:280; 467:156 as *P. zonatus* (Koen.) Berk.). On branches, Bombay (Blatter).
- Poria arenaria* Klotzsch (274:487; 51:394; Sacc. VI:331). On sandy soil, India (Wight).
- carteri* Berk. (163:25; Sacc. VI:309). On trunks, Bombay (Carter).
- cerea* Berk. (57, No. 437; Sacc. VI:320). On dead wood, high valleys of East Nepal (Hooker f.).



- [*Poria diversispora* Berk. & Broome (Sacc. VI:324; 70, III:1, figs.). Common, usually on old bamboo, Bengal (Bose).  
 — *gallo-grisea* Berk. (163:25; Sacc. VI:306). On rotten wood, Nilgiris.  
 — *hypobrunnea* Petch (372:51; Sacc. XXIII:419; 497:38). A common cause of die-back of tea stems, Cachar (Tunstall).  
 — *hypolateritia* Berk. (163:24; Sacc. VI:297; 372:50; 287:375). On wood, Nilgiri Hills (E. S. B[erkeley?]). Injurious to tea and coffee in Ceylon, and stated by Petch (368:158) to occur also on tea in southern India.  
 — *membranicincta* Berk. (Sacc. VI:315; 70, VIII:32, fig.). On decomposed wood, Khulna, Bengal (Bose).  
 [— *poriginosa* Berk. (163:26; Sacc. VI:318). Bombay. Bresadola (84:229) states “= *Ascomyces* ? indeterminabilis.”]  
 — *ravenalae* Berk. & Broome (Sacc. VI:307; 70, IV:3, fig.). Common on dead petioles of palms, Calcutta (Bose).  
*Psathyra calvescens* Berk. (57, No. 310; Sacc. V:1064, 1067). On mossy earth, Darjeeling, 7,500 ft. (Hooker f.).  
 — *flavo-grisea* Berk. (57, No. 300; Sacc. V:1063). On dead wood, in tufts, Darjeeling, 7-8,000 ft. (Hooker f.).  
 — *nana* Massee (319, III:152; Sacc. XVII:85 in error as “*Agaricus nanus* (Mass.) Sacc. & D. Sacc.”). On the ground, Poona (Woodrow).  
 — *nassa* Berk. (57, No. 299; Sacc. V:1061). On dead wood, Darjeeling, 7,000 ft. (Hooker f.).  
 — *obtusata* Fr. (Sacc. V:1066; 263:329). On the ground, Botanic Garden, Saharanpur (Gollan).  
*Psathyrella discolor* Berk. (57, No. 311; Sacc. V:1132). On the ground and on dead timber, Darjeeling, 7,500 ft. (Hooker f.).  
 — *gracilis* Fr. (Sacc. V:1127; 57, after No. 403; 260:152). On the ground, Kursar in the Nubra Valley, Kashmir (Thomson); Botanic Garden, Saharanpur (Gollan).  
 — ? *hydrophora* (Bull.) Sacc. (Sacc. V:1129; 263:329). On the ground, Botanic Garden, Saharanpur (Gollan).  
 — *prona* Fr. (Sacc. V:1131; 260:152; 263:329). On the ground, Botanic Garden, Saharanpur (Gollan).  
*Psilocybe caespiticia* Berk. (57, No. 298; Sacc. V:1053). On clay banks, Darjeeling, 7,500 ft. (Hooker f.).  
 — *tristis* P. Herm. (263:330; Sacc. XVII:89). On the ground, Botanic Garden, Saharanpur (Gollan).  
*Pterula himalayensis* (Massee) Lloyd (287:867; 319, I:114 as *Lachnocladium himalayense* Massee; Sacc. XVI:211). On the ground in a pine forest, Phallaloong Ridge, Sikkim, 10,000 ft. (Gamble).  
 — *penicellata* Berk. in Lloyd (287:863, figs., and 1295). India (P. L. Dey).  
*Radulum emericii* Berk. (178:3; Sacc. XI:111). On logs, Nilgiris.

[*Radulum*] *neilgherrense* Berk. in Herb. (178:3; Sacc. XI:111; 288, No. 59:4).

On logs, Nilgiris. Lloyd (l.c.) thinks that this and the preceding are identical, and also *R. mirabile* Berk. (*Lopharia mirabilis*, q.v.).

—*spongiosum* Berk. (57, No. 450; Sacc. XI:111; 303:2, figs.). On dead wood, East Nepal (Hooker f.).

*Russula alutacea* Fr. (Sacc. V:479; 65:137). In woods, Gulmarg, Kashmir (Aitcheson).

—*cinnabarina* Hooker f. (57, No. 318; not in Sacc.). On clay banks, Darjeeling, 7,500 ft. (Hooker f.).

—*emetica* Fr. (Sacc. V:469; 57, after Nos. 318 and 389). Khasi Hills and on clay banks, Darjeeling (Hooker f.). Berkeley remarks "Found with *Russula rubra*."

—*furcata* Fr. (Sacc. V:456; 57, after No. 316). On clay banks, Sinchul, Sikkim Himalaya, 8,500 ft. (Hooker f.).

—*grossa* Berk. (57, No. 317; not in Sacc.). Darjeeling (Hooker f.).

—*lepida* Fr. (Sacc. V:461; 57, after No. 318). On clay banks, Darjeeling, 8,000 ft. (Hooker f.).

—*sanguinea* (Bull.) Fr. (Sacc. V:457; 57, after No. 389; 263:328). In pine woods, Lachen, Sikkim Himalaya 11,000 ft. (Hooker f.); on the ground, Arnigadh, Mussoorie (Gollan).

*Schizophyllum commune* Fr. (Sacc. V:655; 57, after Nos. 326 and 408; 196:121; 263:328; 467:157; 70, I:109; 287:1295; 288, No. 41:1). On dead wood, Darjeeling, 7,000 ft., and Parasnath, 3,000 ft. (Hooker f.); Calcutta, Sikkim, South Andaman Island, and Toukyeghat, Burma (Kurz); Arnigadh, Mussoorie (Gollan); Poona (Blatter); Calcutta (Bose); India (P. L. Dey).

—*flabellare* Fr. (Sacc. V:655; 349:21). Nilgiris (Perrottet). A small, much branched specimen is in Herb. Montagne.

*Sebacina alutacea* Wakefield (519, XXVI:162). Encrusting the bases of young saplings of *Shorea robusta*, Ganjam, Madras (Minchin).

*Septobasidium pteruloides* (Mont.) Patouill. (362:337; 381:279; 350:152 as *Hydnum? pteruloides* Mont.; not in Sacc.). On dead bark, Madura (Bélangier). Specimens are in Herb. Montagne. Petch (381) gives notes on the morphology and taxonomy of this species.

*Stereum adustum* Lév. (Sacc. VI:562; 196:127; 391:137). Southern Yomah, Burma (Kurz); on old *Pandanus*, Nicobar Islands.

[—*alternum* Lloyd (nomen nudum, 287:1263). India (Bose).]

—*coalescens* Lloyd (287:1338, fig., 1295). Almora, Kumaon Himalaya (S. D. Joshi).

[—*curreyi* Sacc. (Sacc. VI:557; 196:127, fig., as *S. cyathiforme* Currey, not Fr.; 313:168 as *S. cruciculiforme* Massee). On wood, Karen Hills, Burma, 5-6,000 ft. (Kurz). Lloyd (302:14) states that this was based on the empty cups of a *Nidula*.]

- [*Stereum*] *elegans* Meyer (Sacc. VI:553; 196:126; 263:323; 467:154; 379:260; 288, No. 46:2; 297:24, fig.; 287:1295, 1936, fig.). Lower Burma (Kurz); on tree roots, Botanic Garden, Saharanpur (Gollan); on wood, Khandala, Bombay (Blatter); India (P. L. Dey); India (collector unknown).
- endocrinum* Berk. (57, No. 451; Sacc. VI:569). On dead branches, Yangma Valley, East Nepal (Hooker f.).
- floriforme* Bres. (Sacc. XXIII:508; 288, No. 46:2; 297:24). India (Gammie).
- hirsutum* (Willd.) Fr. (Sacc. VI:563; 57, after Nos. 346 and 451; 263:323; 467:154; 288, No. 60:7, No. 69:5; 352). On dead wood, Darjeeling, 7,000 ft., and Lebong, (Hooker f.); Arnigadh, Mussoorie (Gollan); Khandala, Bombay (Blatter); N. W. Himalaya, 6,500 ft. (W. T. Saxton); India (Cave); Sonamarg, Kashmir (R. R. Stewart).
- lobatum* Fr. (Sacc. VI:568; 57, after No. 451; 196:126; 467:154; 379:262; 288, No. 38:8, No. 47:3; 242). On dead wood, Churra, Khasi Hills (Hooker f.); South Andaman Island and Toukyeghat, Burma (Kurz); Khandala, Bombay (Blatter); India (H. V. Ryan; Cave). Lloyd (288, No. 38:8, No. 39:3, No. 46:3) regards this as a luxuriant tropical form of *S. fasciatum*.
- malabarensis* Lloyd? (297:39). Apparently on the ground, Malabar, erroneously referred by Masee (313:162) to *S. elegans*.
- medicum* Currey (196:127, figs.; Sacc. VI:582; 313:202). On wood, Sikkim 5-6,000 ft. (Kurz). Used medicinally by the Lepchas.
- nitidulum* Berk. (Sacc. VI:552; 260:151; 263:323; 319, III:152; 379:259). On stump and roots of *Casuarina*, Botanic Garden, Saharanpur (Gollan); Kalsia (J. H. Blandford); on rotten wood, Poona (Woodrow).
- ostrea* Nees (Sacc. VI:571; 349:23; 196:126). Nilgiris (Perrottet, specimens in Herb. Montagne); Sikkim Himalaya, 4-6,000 ft. (Kurz).
- papyraceum* Masee (319, IV:94; Sacc. XXI:387). On dead wood, Wah-jain, Khasi Hills (Butler).
- princeps* Jungh. (Sacc. VI:570; 288, No. 49:4, No. 69:5, 11; 287:923, fig.; 57, No. 453 as *S. scytale*; 84:232; 196:127, figs.; 313:171). On dead wood, Khasi Hills (Hooker f. and Thomson); Western Himalaya (Strachey); Karen Hills and Yomah, Burma (Kurz); India (Cave). Causes a pocket rot in timbers, resembling that caused by *S. frustulosum*.
- purpureum* Pers. (Sacc. VI:563; 57, after No. 346; 263:323). On dead wood, Darjeeling, 7-8,000 ft. (Hooker f.); Arnigadh, Mussoorie (Gollan).
- rimosum* Berk. (57, No. 346; Sacc. VI:568; 379:265). On vegetable soil, old trees, etc., Darjeeling, 7,500 ft. (Hooker f.).
- schomburgkii* Berk. (Sacc. VI:568; 287:1069). India (Bose).
- spadiceum* Fr. (Sacc. VI:564; 57, after Nos. 346 and 451). On dead wood, Darjeeling, 7,000 ft., and Lachen, Sikkim, 8,000 ft. (Hooker f.).
- Strobilomyces indicus* Lloyd (287:1331, fig., 1295). India (P. L. Dey).

- [*Strobilomyces*] *montosus* Berk. (57, No. 333; Sacc. VI:50). On dead wood and on the ground, Jallapahar, Darjeeling, 7,500 ft. (Hooker f.).
- *nigricans* Berk. (57, No. 398, fig.; Sacc. VI:50). In woods, Kala Pani, Khasi Hills, 5,000 ft. (Hooker f.).
- *polypyraxis* Hooker f. (57, No. 332; Sacc. XI:81). Jallapahar, Darjeeling, 7,500 ft. (Hooker f.).
- *strobilaceus* (Scop.) Berk. (Sacc. VI:49; 352). Sonamarg, Kashmir (R. R. Stewart).
- Stropharia aureo-fulva* Berk. (57, No. 292 as *Agaricus (Psalliota) aureofulvus* Berk.; Sacc. V:1015). On dead wood, Jallapahar, Darjeeling, 7-8,000 ft. (Hooker f.).
- *aurivella* Massee (319, XIV:255; Sacc. XXIII:306). Among grass, Calcutta Maidan (Burkill).
- ? *crococopepla* Berk. & Broome (Sacc. V:1017; 260:153). On the ground, Kalsia (J. H. Blandford).
- *gollani* P. Henn. (260:152; Sacc. XVI:120). On shady ground, Saharanpur (Gollan).
- *mephistopheles* Cke (172:7; Sacc. IX:139). On the ground, Belgaum (Hobson).
- *merdaria* Karst. (Sacc. V:1020; 319, III:151; 263:330). On dung, Poona (Woodrow); Botanic Garden, Saharanpur (Gollan).
- *psathyroidea* P. Henn. (263:330; Sacc. XVII:86). On the ground, Botanic Garden, Saharanpur (Gollan).
- *pygmaea* P. Henn. (260:152; Sacc. XVI:121). On the ground, Saharanpur (Gollan).
- *semiglobata* (Batsch) Quél. (Sacc. V:1022; 57, after No. 383, as *Agaricus semiglobatus* Batsch). On the ground, Myrong, Khasi Hills, 6,000 ft. (Hooker f.).
- Thelephora* ? *aurantiaca* Pers. (Sacc. VI:526; 263:324). On the ground, Botanic Garden, Saharanpur (Gollan).
- *gelatinosa* Saut. (Sacc. VI:541; 287:955). India (Cave).
- *palmata* (Scop.) Fr. (Sacc. VI:529; 57, after No. 450; 196:126; 352). On the ground, Nunklow, Khasi Hills (Hooker f.); on bamboo stems, Royal Botanic Garden, Calcutta (Kurz); Sonamarg, Kashmir (R. R. Stewart).
- *pusilla* Currey (196:126, fig.; Sacc. VI:532). Sikkim, 2,000-2,500 ft. (Kurz).
- *sowerbyi* Berk. & Broome (Sacc. VI:522; 263:324). On tree roots and dead trunks, Botanic Garden, Saharanpur (Gollan).
- *sparassoides* P. Henn. (263:324; Sacc. XVII:162). On dead branches, Arni-gadh, Mussoorie (Gollan).
- Trametes acu-punctata* Berk. (Sacc. VI:279 as a syn.; 287:943, fig., 1266, as *Polystictus luteo-olivaceus* Berk. & Broome; 84:67; 435:72). India (D. Marudra Rajan); on dead wood in Dhoni forests, Malabar (435).

- [*Trametes carteri*], Berk. in Herb. (Sacc. IX:196; 287, No. 49:4). On trunks, Bombay (? Carter); India (Cave).
- cincta* Bose (76:173, fig.; 287:1069). On trunk of *Artocarpus integrifolia*, Darjeeling (Bose).
- cingulata* Berk. (57, No. 441; Sacc. XXI:866; 196:125; 70, II:142, figs.; 288, No. 42:12; 287:1125; 70, I, fig.; 70, VII:27 as *T. picta* Berk. & Broome; 84:229; 287:1069). On dead wood, Sone River, Bihar (Hooker f.); Yomah, Burma, and Royal Botanic Garden, Calcutta (Kurz); Sibpur, Bengal, and on dead bark of living coconut tree, Bengal (Bose); India (J. Ray; D. Maruda Rajan). Saccardo (VI:199) first changed the name to *Fomes virginiae* Manc. & Sacc., because there is an earlier *Polyporus cingulatus* Fr.
- colliculosa* Berk. (Sacc. VI:349; 57, after No. 441). On dead wood, Darjeeling (Hooker f.).
- crenulata* Berk. (57, No. 440; Sacc. VI:336; 70, IV:5, fig.; 287:952). On dead wood, Darjeeling (Hooker f.); Howrah, Bengal (Bose).
- curreyi* Cke (Sacc. VI:356; 196:124, fig., as *T. umbrina* Currey, not Fr.). Nakawa, Toukyeghat, Burma (Kurz).
- devexa* Berk. (Sacc. VI:341; 70, VII:27; 287:1010). On a dead tree, Cox's Bazar, Bengal (Bose). Bresadola (84:229) states that *Trametes "devexa" Bres.* = *Polyporus occidentalis* Klotz. f. *obesa*.
- elegans* (Spreng.) Fr. (Sacc. VI:335; 350:146 as *Daedalea elegans* Spreng.). The specimen in Herb. Montagne is in good condition, and is marked "Pegu, ex Bélanger."
- floccosa* Bres. (Sacc. XIV:192; 70, IV:4, figs.; 287:1010). On bark at base of a tree trunk, Calcutta (Bose).
- fuscella* Lév. (Sacc. VI:347; 73:131, figs.; 287:1069). On rotten wood, Bengal (Bose).
- gibbosa* (Pers.) Fr. (Sacc. VI:337; 288, No. 69:5, as *Daedalea gibbosa*). India (Cave).
- hololeuca* (Kalchbr.) ? Lloyd (Sacc. VI:241 as *Polystictus*; 288, No. 28:2). Bengal (Hutchings). Lloyd states that it is close to *T. muelleri*, and not a *Polystictus*. We are not certain that Lloyd was the first to make the *Trametes* combination.
- hookeri* Berk. (57, No. 439; Sacc. VI:336). On dead wood, Darjeeling (Hooker f.).
- immutata* Berk. (57, No. 443; Sacc. VI:343). On dead wood, Khasi Hills (Hooker f.).
- incerta* (Currey) Cke (163:56; Sacc. VI:352; 196:123, figs., as *Polyporus incertus* Currey; 175:102 as *T. burchelli* Berk. in Herb.; 287:899). On wood, Burma (Kurz).

- Trametes*] *karii* Bose in Lloyd (287:1148, fig.; 952, 1010). India (Bose). Lloyd twice spelled the name "karie" and once "karii"; but we assume that Prof. Bose intended to name the plant for Mr. Kar.
- lactinea* Berk. (Sacc. VI:343; 70, III:1, figs.; 288, No. 45:2, No. 60:7; 287:955). On dead wood, Howrah District, Bengal (Bose); India (Irani, Cave); N. W. Himalaya, 6,500 ft. (W. T. Saxton).
- muelleri* Berk. (Sacc. VI:339; 288, No. 27:3; 70, V:24, figs.). On wood, Howrah District, Bengal (Bose); Bengal (Hutchings).
- obstinata* Cke (288, No. 49:3). India (Cave). Bresadola (84:229) considers this to be a form of *Polystictus meyenii* (q.v.).
- pini* (Brot.) Fr. (Sacc. VI:345; 251, figs.; 299:275, figs.; 416; 265:194; 439; 111:97). On *Pinus excelsa* near Simla (Hole); on *Cedrus libani* var. *deodara*, Kashmir (Singh); Punjab (Suri); on roots and base of trunk of *Pinus longifolia*, Himalaya (Hafiz Khan).
- plebeja* (Berk.) Lloyd (299:227; 56:179 as *Polyporus plebeius* Berk. var.  $\alpha$ ). Himalaya. See note with *Fomes semitostus* above.
- serpens* Fr. (Sacc. VI:355; 263:327; 70, IV:4, fig.). On dead trunks, Botanic Garden, Saharanpur (Gollan); on dead bark, Hooghly, Bengal (Bose).
- sycomori* P. Henn. (Sacc. XI:96; 287:1126). South India (D. Maruda Rajan).
- versiformis* Berk. & Broome (Sacc. VI:339; 287:1125). India (D. Maruda Rajan).
- emella fuciformis* Berk. (Sacc. VI:782; 288, No. 28:2; 287:790, fig.). Bengal (Hutchings).
- protensa* Berk. (57, No. 455; Sacc. VI:782). On trees, Darjeeling, 7,500 ft. (Hooker f.).
- emellodon gelatinosum* (Scop.) Pers. (Sacc. VI:479; 287:1126). South India (D. Maruda Rajan).
- icholoma cremoriceps* Berk. (57, No. 252; Sacc. V:113). On tree trunks, Darjeeling, 7,500 ft. (Hooker f.).
- giganteum* Massee (319, XIV:254; Sacc. XXIII:25). Shamnagar, near Calcutta (Burkill).
- melaleucum* (Pers.) Fr. (Sacc. V:134; 352 as "*Melanoleuca melaleuca*"). Sonamarg, Kashmir (R. R. Stewart).
- subpulverulentum* (Pers.) Fr. (Sacc. V:136; 57, after No. 401). On the ground, near Sassar in Kashmir, 16,000 ft. (Thomson). Found also by Strachey.
- ogia belangeri* (Mont.) Fr. (239:402; Sacc. V:635; 350:145, fig., as *Agaricus* (*Crepidotus*) *belangeri* Mont.). On trunks, Mannentoddy, Western Ghats (Bélanger). Montagne later (351:121) stated "*Verus Xerotus*" and Lloyd (287:1227, fig.) writes it "*Xerotus belangeri*."
- königii* Fr. (239:402; Sacc. V:626). Recorded by Fries as "*In India orientali. Koenig.*"

- [*Trogia*] *montagnei* Fr. (Sacc. V:636; 350:149, fig., as *Cantharellus aploretus* Mont.). On fallen branches in forest, Trichinopoly Hills (Bélanger). Specimen not found at Paris.
- Tubaria asperata* P. Henn. (263:331; Sacc. XVII:76). On the ground, Botanic Garden, Saharanpur (Gollan).
- furfuracea* (Pers.) W. G. Smith (Sacc. V:872; 263:331). On the ground, Botanic Garden, Saharanpur (Gollan).
- saharanpurensis* P. Henn. (263:332; Sacc. XVII:76). On the ground, Botanic Garden, Saharanpur (Gollan).
- Typhula fuscipes* (Pers.) Fr. (Sacc. VI:750; 196:127). Sikkim, 7,000 ft., with *Polystictus versicolor* (Kurz).
- Ulocolla foliacea* (Pers.) Bref. (Sacc. VI:778; 196:127 as *Tremella foliacea* Pers.; 57, after No. 347, as *T. ferruginea* Smith). On mossy and rocky wet places, Tonglo, Sikkim, 10,000 ft. (Hooker f.); on shrubs, Sikkim, 10,000 ft. (Kurz).
- Urobasidium rostratum* Giesenhagen (246:139; Sacc. XI:131). On galls of *Taphrina cornu-cervi* on leaves of *Aspidium aristatum*, Nepal (Wallich).
- Volvaria castanea* Massee (319, XIV:254; Sacc. XXIII:179). Under the north side of a wall, Calcutta (Burkill).
- delicatula* Massee (319, XIV:254; Sacc. XXIII:180). Under a wall, Calcutta (Burkill).
- diphasia* Berk. & Broome (Sacc. V:658; 71:350, fig.). On rotten straw heaps, Hooghly District, Bengal (Bose). Eaten by the villagers.
- liliputiana* P. Henn. (263:333; Sacc. XVII:53). On the ground, Botanic Garden, Saharanpur (Gollan).
- media* (Schum.) Fr. (Sacc. V:662; 263:334). On the ground, Botanic Garden, Saharanpur (Gollan).
- terastria* Berk. & Broome (Sacc. V:661; 70, II:137, figs., as *V. "terastius"*; 74:643). Very common on heaps of rotten straw, Bengal (Bose). Edible.
- thwaitesii* Hooker f. (57, No. 286; Sacc. V:656). On dead wood, Darjeeling, 7,000 ft. (Hooker f.).
- volvacea* (Bull.) Sacc. (Sacc. V:657; 263:334). Arnigadh, Mussoorie, 5,500 ft. (Gollan).
- woodrowiana* Massee (319, II:166; Sacc. XVI:69). On the ground, Poona (Woodrow).
- Xerotus cantharelloides* Berk. (57, No. 327; Sacc. V:630). On dead wood, Jallapahar, Darjeeling (Hooker f.).
- lateritius* Berk. & Curt. (Sacc. V:634; 467:157). On dead branches, Khanda, Bombay (Blatter). Theissen (l.c. and 472:155, 159) quotes Lloyd as considering this species as probably identical with *Anthracoephyllum nigrum* (q.v.).

[*Xerotus*] *perrottetii* Mont. (351:151; Sacc. V:631; 349:22, erroneously referred to *X. berteri* Mont.). On branches, near Ootacamund, Nilgiris (Perrottet). A good specimen is in the general herbarium at Paris.

## GASTEROMYCETES

*Astraeus hygrometricus* (Pers.) Morg. (Sacc. VII:90 as *Geaster hygrometricus* Pers.; 57, after No. 455; 145:13; 263:338; 288, No. 65:4; 287:1295). On the ground, Simla (Thomson); Saharanpur (Duthie); Arnigadh, Mussoorie (Gollan); India (Kashyap; P. L. Dey).

*Battarrea levispora* Massee (319, III:152; Sacc. XVII:224). On the ground, Poona (Woodrow). Lloyd (290:7, fig.) considers it a form of *B. phalloides* (Dicks.) Pers.

*Bovista argentea* Berk. (51:400; Sacc. VII:102). On the ground, Madras (Wight). Lloyd (287:190) states that the type at Kew is *Lanopila bicolor*, but the description suggests *B. dealbata*.

—*brasilensis* (Fr.) de Toni (Sacc. VII:100; 196:128 as *Lycoperdon brasiliense* Fr.). On wood, Nakawa, Toukyeghat, Burma (Kurz).

—*plumbea* Pers. (Sacc. VII:96; 263:337). On the ground, Arnigadh, Mussoorie (Gollan).

*Bovistella aspera* (Lév.) Lloyd (Sacc. VII:119; 287:1295). India (P. L. Dey).

—*bovistoides* (Oke & Massee) Lloyd (166:26 as *Mycenastrum bovistoides* Oke & Massee; Sacc. VII:489 as *Scleroderma bovistoides* (Oke & Massee) Sacc.; 287:284, fig.; 288, No. 65:4). On the ground, amongst moss, Nilgiris (Herb. Berkeley); India (G. H. Cave; Kashyap).

—*trachyspora* Lloyd (287:287, figs.; Sacc. XXI:483). Evidently in moss, Respanna Valley, Mussoorie (Gollan).

*Calathiscus sepia* Mont. (349:23; Sacc. VII:24). On tree trunks in a damp forest, near Ootacamund, Nilgiris (Perrottet). Lloyd (292:43, fig.) writes the name "*Anthurus calathiscus*", but states that nothing is known of this fungus except Perrottet's crude figure.

*Calvatia gardneri* Berk. (Sacc. VII:129 as *Lycoperdon*; 288, No. 15:3, No. 34:2). On the ground, Shillong, Khasi Hills (Butler); Bengal (Bose).

—*lilacina* (Mont. & Berk.) Morgan (Sacc. VII:126 as *Lycoperdon*; 288, No. 12:2, No. 13:2). Bombay (Kirtikar); Poona (Gammie).

*Gauloglossum elatum* Fr. (237, III:61; Sacc. VII:57). On the ground, India (Koenig).

*Lathrus cancellatus* Tournef. (Sacc. VII:19; 57, after No. 455; 400:154). On the ground, Myrong, Khasi Hills (Hooker f.); Sikkim (Remy). *C. ruber* (Mich.) Pers. is the same species.

*Rufibulum vulgare* Tul. (Sacc. VII:43; 286:160). Nilgiris (Perrottet). The specimen is still at Paris.



- Cyathus hookeri* Berk. (57, No. 461; Sacc. VII:35). On wood and in moss, Khasi Hills (Hooker f.). Lloyd (291:28, fig.) regards it as close to *C. microsporus*, but Cunningham (193:65, fig.) considers it distinct.
- intermedius* (Mont.) Tul. (Sacc. VII:35; 196:128; 291:23, fig.). Sibpur, near Calcutta (Kurz).
- limbatus* Tul. (Sacc. VII:37; 288, No. 15:3, No. 17:2; 291:16, fig.; 374:61; 144:96 as *C. limbatus* Fr.). Belgaum (Hobson); in a flower pot, Royal Botanic Garden, Calcutta (Butler).
- microsporus* Tul. (Sacc. VII:35; 288, No. 15:3; 291:27, fig.). On wood and on the ground, Wahjain and Shillong, Khasi Hills (Butler).
- poeppigii* Tul. (Sacc. VII:37; 263:336; 374:61; 288, No. 17:2; 291:15, fig.). On the ground and on charred wood, Botanic Garden, Saharanpur (Gollan); on dead branches, Pusa (Butler).
- stercoreus* (Schwein.) de Toni (Sacc. VII:40; 288, No. 13:2, No. 65:4; 291:20, fig.; 287:1295). Poona (Gammie); India (Kashyap; P. L. Dey).
- Dictyophora indusiata* (Ventenat) Pers. (Sacc. VII:3 as *D. phalloidea* Desvaux; 467:158; 374:58; 57, after No. 455, as *D. speciosa* Klotzsch; 287:332, 453 as *Phallus indusiatus* Vent.; 292:18, fig.). Sikkim, and Churra, Khasi Hills (Hooker f.); on the ground, Khandala, Bombay (Blatter); North Bengal (Hutchings). Fischer in a recent paper (Ann. Myc., XXV:472, 1927) gives the authorities as above; Dodge, in his translation of Gäumann's "Comparative morphology of Fungi" writes it "*D. indusiata* (Ventenat ex Pers.) E. Fischer".
- nana* Berk. (66:39; Sacc. VII:7). Andaman Islands (Berkeley Jr.). Lloyd (292:78) lists this as a synonym of the preceding species.
- Geaster englerianus* P. Henn. (Sacc. XI:162; 288, No. 19:5). India (G. H. Krumbiegel). Lloyd (287:310, fig.) says "In the tropics *G. saccatus* takes a black form which has been called *englerianus*".
- fimbriatus* Fr. (Sacc. VII:82; 319, III:152). On the ground, ? Punjab (Duthie). Lloyd (289:23) thinks *G. fimbriatus* grows only in Europe.
- lageniformis* Vittadini (Sacc. VII:86; 263:337; 288, No. 65:4). On the ground, Arnigadh, Mussoorie (Gollan); India (Kashyap).
- lilacinus* Massee (319, II:166; Sacc. XVI:237). On the ground, Dehra Dun (Gamble).
- limbatus* Fr. (Sacc. VII:81; 57, after No. 455). "Form minor", Simla (Thomson).
- plicatus* Berk. (51:399; Sacc. VII:76 as *G. tenuipes* Berk.; 289:18, fig.). On the ground, Madras (Wight).
- Gyrophragmium delilei* Mont. (Sacc. VII:51; 352). Sonamarg, Kashmir (R. R. Stewart).
- Ithyphallus aurantiacus* (Mont.) Ed. Fisch. (Sacc. VII:9; 349:23 as *Phallus aurantiacus* Mont.; 61:21 as *P. truncatus* Berk.). On the ground, Pondi-

cherry (Perrottet); "Plains of India" (61). Perrottet's collections are in Herb. Montagne. Lloyd (292:14; see also 287:458) makes this a synonym of *I. rubicundus* (Bosc) Ed. Fisch.

[*thyphallus*] *impudicus* (L.) Fr. (Sacc. VII:8). As Lloyd (287:328) notes, "there is a very small and very doubtful specimen so named" from Herb. Griffiths, India (? Churra), in Kew Herbarium.

*anopila* *bicolor* (Lév.) Patouill. (Sacc. XVI:240; 286:162 as *Bovista bicolor* Lév.; 287:190, fig.; 374:67). On the ground, Bombay (Polydore Roux); reported in Saccardo also from the Nicobar Islands. Lloyd (288, No. 66:8) considers it safe to place this species as a synonym of *L. wahlbergii* Fr. See also *Bovista argentea*.

*asiosphaera* *fenzlii* Reichardt (391:135, fig.; Sacc. VII:96 as *Eriosphaera fenzlii* Reich.; 287:191, fig.). Locality unknown: probably India (Novara Expedition); on manure, India (Cave).

*coperdon* *alveolatum* Lév. (286:163; Sacc. VII:120). On the ground, Nilgiris (Perrottet). Type at Paris in good condition.

—*berkeleyi* de Toni (Sacc. VII:124; 57, No. 457 as *L. delicatum* Berk., not Berk. & Curt.). On the ground, Khasi Hills (Hooker f.). Lloyd (287:243) discusses the names, and see also Coker and Couch, *Gasteromycetes of the Eastern United States and Canada*.

—*elongatum* Berk. (57, No. 456; Sacc. VII:123; 263:337). On mossy ground, Darjeeling, 7,500 ft., and East Nepal (Hooker f.); Arnigadh, Mussoorie (Gollan).

—*emodense* Berk. (57, No. 458; Sacc. VII:110). On the ground, Sikkim, 15,000 ft., and Phallut, East Nepal, 9,000 ft. (Hooker f.).

—*fucatum* Lév. (Sacc. VII:125; 57, after No. 456). Khabili river, East Nepal, 5-6,000 ft. (Hooker f.). Capillitium and spores only seen by Berkeley.

—*gemmatum* Batsch (Sacc. VII:106; 57, after No. 349; 196:128; 287:1266, 1295). On the ground, paths, clay banks, and decayed timbers, Jallapahar, Darjeeling, 7-8,000 ft. (Hooker f.); Sikkim Himalaya, 7-8,000 ft. (Kurz); India (D. Maruda Rajan; P. L. Dey).

—*giganteum* Batsch (Sacc. VII:109; 352). Sonamarg, Kashmir (R. R. Stewart). This species is often called *Calvatia gigantea*.

—*hiemale* Bulliard (Sacc. VII:115; 57, after No. 348, as *L. cielatum* Fr.). On the ground, Darjeeling, 7,000 ft. (Hooker f.).

—*p marginatum* Vittad. (Sacc. VII:127; 263:337). On the ground, Botanic Garden, Saharanpur (Gollan).

—*microspermum* Berk. (57, No. 350; Sacc. VII:110). On the ground, Darjeeling (Hooker f.); Gauhati and Dauracherra, Assam (Butler). Lloyd (289:30) states that this appears to be the same as *L. pusillum*.

- [*Lycoperdon*] "*nigrum*" (288, No. 31:3; not in Sacc.). India (Kirtikar). We are unable to interpret the name applied by Lloyd. Perhaps he meant *L. nigrescens* Pers.
- piriforme* Schaeff. (Sacc. VII:117; 288, No. 17:2, No. 35:2; 57, after No. 349; 374:72). On dead wood, Sikkim, 8,000 ft. (Hooker f.); India (Butler); India, 8,000 ft. (Cave).
- pusillum* Batsch (Sacc. VII:110; 57, after No. 459; 196:128; 288, No. 17:2). On the ground, Eastern Nepal (Hooker f.); in elephant grass jungles, Kayosoo, Lower Burma (Kurz); on the ground, Dehra Dun (Butler: specimens larger than those found in Europe).
- saccatum* Vahl (Sacc. VII:128; 263:336). On the ground, Arnigadh, Mussoorie (Gollan).
- sericellum* Berk. (57, No. 349; Sacc. VII:116). On the ground, Darjeeling, 7,000 ft. (Hooker f.).
- xanthospermum* Berk. (57, No. 459; Sacc. VII:111). On the ground, Moflong, Khasi Hills (Hooker f.).
- Melanogaster durissimus* Oke (143:94; Sacc. VII:167). A few inches below the surface of the ground, near Chakrata, Himalaya (Baden-Powell). Edible.
- Mitremyces junghuhnii* Schlect. & Muell. (Sacc. VII:69; 57, after No. 460; 57, No. 352 as *M. viridis* Berk.). On the ground and on dead timber, Tonglo, Sinchul, and Chola, Sikkim, 6-9,000 ft. (Hooker f.); Butan (Nuttall). Lloyd (287:241) found no difference between *M. viridis* and *M. junghuhnii*.
- Nidula emodensis* (Berk.) Lloyd (291:12, fig.; 57, No. 462 as *Cyathus emodensis* Berk.; Sacc. VII:40). On dead wood, Lachen, Sikkim, 12-13,000 ft. (Hooker f.).
- Podaxon calyptratus* Fr. (Sacc. VII:59; 145:13). On the ground, Punjab (Aitcheson); on sandy soil, Chatrapur, Ganjam (Butler).
- carcinomalis* (L.) Fr. (Sacc. VII:58; 61:21). "Probably common in India" Berkeley.
- emerici* Berk. in Herb. (312:75, figs.; Sacc. IX:267). On the ground, Masulipatam (Capt. Emeric Berkeley).
- gollani* P. Henn. (263:338; Sacc. XVII:219). On the ground, Botanic Garden, Saharanpur (Gollan).
- pistillaris* (L.) Fr. (Sacc. VII:59; 287:170; 288, No. 15:3, No. 17:2; 312:74, figs., as *P. indica*). On the ground, India (Koenig); Nadiad, Bombay (Butler); Mirpur, Matholo, Sind; Madras; Punjab; Afghanistan (Aitcheson). Lloyd (288, No. 17:2) mentions that the Indian collections he examined agreed well with the type in the Linnaean Herbarium, which came originally from India. Described first by Linnaeus as *Lycoperdon pistillare*. (See p. i.)
- Polygaster sampadarius* (Rumph.) Fr. (237, II:295; Sacc. VII:146). In woods, India (Koenig).

- cleroderma aurantium** Pers. (Sacc. VII:134 as *S. vulgare* Hornem; 263:338; 288, No. 2:2, No. 17:2; 289:15). India (R. L. Proudlock; Butler); on the ground, Arnigadh, Mussoorie (Gollan). Lloyd states that the Indian specimens he examined were just like those of Europe and America.
- bovista** Fr. (Sacc. VII:135; 57, after No. 351; 263:338). On the ground, Sikkim (Hooker f.); Arnigadh, Mussoorie (Gollan).
- cepa** (Vaill.) Pers. (Sacc. VII:135; 288, No. 17:2; 287:1295). South India (Butler); India (P. L. Dey).
- columnare** Berk. & Broome (Sacc. VII:144 as *Alveolaria*?; 288, No. 17:2). India (Cave). Lloyd states that this species is known only from India and Ceylon.
- cockei** de Toni (Sacc. VII:140; 158:6 as *Mycenastrum lycoperdioides* Cke, not Schwein.). Amongst moss, Nila Valley, Garhwal, Himalaya, 12,000 ft.
- dictyosporum** Patouill. (Sacc. XIV:266; 288, No. 15:3). On the ground, Dehra Dun (Butler).
- geaster** Fr. (Sacc. VII:138; 57, after No. 459; 113 (19):54, as *Sclerangium polyrhizon* (Gmel.) Lév.). On clay banks, Nunklow, Khasi Hills, 4-5,000 ft. (Hooker f.); Shillong, edible. The late Abbé Bresadola determined the Shillong specimen as "*Sclerangium polirrhizon*".
- nitidum** Berk. (57, No. 460; Sacc. VII:138; 287:1295, 1306, fig.). On the ground, Nangki, Eastern Nepal, 10,000 ft. (Hooker f.); India (P. L. Dey).
- verrucosum** (Bull.) Pers. (Sacc. VII:136; 263:338; 288, No. 15:3, No. 17:2). On the ground, Arnigadh, Mussoorie (Gollan); Dehra Dun (Butler: recorded by Lloyd as "*S. ctespitosum*, new form of *verrucosum*").
- ablum periphragmoides** Klotzsch (Sacc. VII:17; 287:424; 292:66 as *S. gracile* Berk.). Lloyd states that this is a very common species in Java, Ceylon, and India.
- aerobolus stellatus** Tode (Sacc. VII:46; 291:28, fig.; 263:336 as *S. carpobolus* (L.) Schroet.). On dead moss, Botanic Garden, Saharanpur (Gollan).
- ostoma bonianum** Patouill. (Sacc. XI:159). Lloyd (290:14, fig.) states that he has seen what he takes to be this plant from India in the Kew Herbarium.
- exasperatum** Mont. (Sacc. VII:64; 290:12, 26, fig.). Lloyd states that he has seen specimens from India.
- mussooriense** P. Henn. (263:337; Sacc. XVII:223; 374:63; 290:14, fig.). On the ground, Arnigadh, Mussoorie (Gollan).
- pusillum** Berk. (Sacc. VII:64; 286:165). On twigs, Madras. Lloyd (290:26) states that it is evidently very similar to *T. exasperatum*.
- wightii** Berk. (52:157; Sacc. VII:62). On the ground, Madras (Herb. Hooker).
- xylopodium aitchesonii** Cke & Massee (167:69; Sacc. VII:489). On the ground, Afghanistan frontier (Aitcheson). Lloyd (289:10) says there is no doubt *Xylopodium* is a synonym of *Phellorina*.

## FUNGI IMPERFECTI.

## HYPHOMYCETES (AND MYCELIA STERILIA).

- Acrothecium lunatum** Wakker (Sacc. XIV:1089; 113(13):36; 341:70; 311:2). On leaves of *Andropogon sorghum*, *Setaria italica*, *Panicum frumentaceum*, *Eleusine coracana*, male inflorescence of *Zea mays*, and by inoculation on young leaves of *Pennisetum typhoideum*, Pusa (Mitra); isolated from paddy soil, Burma (Rhind).
- **penniseti** Mitra (341:70, figs.; 311:5). On leaves and ears of *Pennisetum typhoideum* and by inoculation on male inflorescence of *Zea mays*, Pusa (Mitra).
- Actinomyces bovis** Harz (Sacc. VIII:928 as *Nocardia*; 2:50; 339). Causing a human lung infection, Goa (Fr. de Mello).
- **scabies** (Thaxt.) Güssow (Sacc. XXII:1240 as *Oospora*; 113(17):54). On tubers of *Solanum tuberosum*, Khasi Hills (McRae).
- Alternaria brassicae** (Berk.) Bolle, not Sacc. (Sacc. IV:526 as *Macrosporium*; 111:81, 300, figs.; 319, III:153, as *Sporodesmium brassicae* Massee; 311:19). Parasitic on *Brassica campestris* var. *sarson*, Tirhoot (Watt); Pusa (Butler).
- **circinans** (Berk. & Curt.) Bolle (Sacc. IV:524 as var.; 311:19). On *Brassica oleracea* (cabbage), Pusa (A. N. Khan).
- **crassa** (Sacc.) Rands (Sacc. IV:448 as *Cercospora*). This is perhaps the fungus referred to *A. solani* on *Datura stramonium*, Calcutta (Bal, 28, II:7-9).
- **dianthi** Stev. & Hall (Sacc. XXII:1410; 119). On *Hibiscus tiliaceus*, *Jasminum* sp., and *Calendula officinalis*, Lahore (Chaudhuri).
- **palandui** Ayyangar (25:13). On leaves of *Allium cepa*, Coimbatore (Ayyangar).
- **solani** (Ell. & Mart.) Jones & Grout (Sacc. IV:530 as *Macrosporium*; 111:288, fig.; 87; 89; 28, II:8; 113(17):55). On leaves of *Solanum tuberosum*, Farukhabad, United Provinces (Butler); and throughout northern India.
- **tenuis** Nees (Sacc. IV:545; 311:22). On leaves of *Saccharum officinarum*, India (Mohendra).
- **?violae** Galloway & Dorsett (Sacc. XVI:1080; 28, II:6-7, figs.). Recorded doubtfully by Bal on *Nicotiana plumbaginifolia* leaves, Bengal.
- Anthromyces indica** P. Henn. (263:342; Sacc. XVIII:652). On dead branches, Botanic Garden, Saharanpur (Gollan).
- Aspergillus aguiari** de Mello (340:91, figs.). In urine, Goa (de Mello).
- **albicans** de Mello (340:58, figs.). As a contamination of agar media, Goa (de Mello).
- **candidus** Link (Sacc. IV:66; 340:58; 461:145). Common as a contamination of culture media, Goa (de Mello); from soil, Madras (Thakur and Norris).

- Aspergillus* *castaneus* Patterson (Sacc. XVI:1029 as *Sterigmatocystis*; 109). On fruits of *Punica granatum*, India. Thom & Church (485:74, 174) state that it may be a strain of the *A. niger* group.
- corolligenus* Massee (as *Sterigmatocystis*; 319, X:5; Sacc. XXII:1259; 485:164). On corolla of *Impatiens* sp., Manipur (comm. Hooker f.).
- ferrugineus* Cke (as *Sterigmatocystis*; 144:95; 160:139, figs.; Sacc. IV:74). On pupa of *Lepido tera* (Eri silk moth=*Attacus ricini*), Cachar (Moore). Thom & Church (485:217) would drop this species.
- flavus* Link (Sacc. IV:69; 267:141, 148; 461:145; 311:24). On roots of *Polygala arillata*, used for rice-beer brewing, Khasi Hills (267); from soil, Madras (Thakur and Norris); from paddy soil, Burma (Rhind).
- fumigatus* Fresenius (Sacc. IV:65; 113(7):56; 113(9):69; 229:63; 461:145). In soil, Pusa (Shaw); Madras (Thakur and Norris); in jute bales affected by "heart damage", Dacca (Finlow).
- "fuscus" (461:145). From soil, Madras (Thakur and Norris). The author of the species was not given; Thom & Church (485) record four species described as "*A. fuscus*".
- nidulans* (Eidam) Wint. (Sacc. X:524 as *Sterigmatocystis*; 461:145). From soil, Madras (Thakur and Norris).
- niger* van Tiegh. (Sacc. IV:75 as *Sterigmatocystis*; 267:147; 113(7):56; 340:98; 461:145; 496; 311:25; 129:90 as *Torula incarcerationata* Cke). Within seed of *Gossypium*, Dharwar; in soil, Pusa (Shaw); in rice-beer ferment, Ranchi (Hutchinson and Ayyar); in tea during fermentation (Tunstall); from paddy soil, Burma (Rhind); in soil, Madras (Thakur and Norris).
- ortae* de Mello (340:88, figs.). Very frequent as a laboratory mould, Goa (de Mello).
- phaeocephalus* Durieu & Mont. (Sacc. IV:76 as *Sterigmatocystis*; 140:118). On roots of *Asparagus racemosus*, Madras.
- polychromus* de Mello (338:153; 340:82, figs.; 485:137). Goa (de Mello).
- repens* (Cda) de Bary & Woronin (Sacc. IV:64; 485:113; 461:145). In soil, Madras (Thakur and Norris).
- sulphureus* (Fres.) Wehmer (485:185; Sacc. IV:73 as *Sterigmatocystis*; 338:158). Recorded as a laboratory mould, Goa (de Mello).
- tamaril* Kita (485:194; 311:25). From paddy soil, Burma (Rhind); India.
- terreus* Thom (485:150; 311:25). From paddy soil, Burma (Rhind).
- ustilago* Beek (50:148, fig.; Sacc. X:526 as *Sterigmatocystis*; 485:177). In pericarp of *Phyllanthus emblica*, Satpore Mountains.
- usidiella sphaerocarpa* Cke (140:118; 160:138, figs.; Sacc. X:698). In decayed roots of *Gloriosa superba*, Madras.
- spora catenula* (Lév.) Sacc. (Sacc. IV:344; 285:71 as *Septonema catenula* Lév.). On leaves of *Quercus deulbata*, India (Jacquemont).

- Botrytis cinerea** Pers. (Sacc. IV:129; 461:145). From soil, Madras (Thakur and Norris).
- [—**vulgaris** Fr. (Sacc. IV:128; 89:48). On *Primula*, Dehra Dun (Butler). Usually regarded as a synonym of the last.]
- Campotrichum cinnamomi** Cda (185, IV:28, fig.; Sacc. IV:296). On leaves of *Cinnamomum* sp., Tenasserim (Helfer).
- Cephalosporium acremonium** Cda (Sacc. IV:56; 461:145). From soil, Madras (Thakur and Norris).
- lecanii** Zimm. (375, VI:153; 454:392). On *Lecanium viride* on *Coffea*, South India; on *L. hemisphaericum* on *Coffea*, Mysore (Lefroy).
- sacchari** Butler (115:181, figs.; 111:402, figs.). In culms of *Saccharum officinarum* throughout India.
- Ceratophorum hypodermium** (Niessl) Sacc. (Sacc. IV:397; 388:146 as *Sporidesmium hypodermium* Niessl). Habitat not stated, Royal Botanic Garden, Calcutta (Kurz).
- Cercospora ajrekari** Syd. (443, XII:202). On leaves of *Jatropha nana*, Poona (Ajrekar).
- annulata** Cke (144:95; Sacc. IV:475; 457:262). On leaves of *Ficus hispida*, Calcutta (J. Scott); Pusa; Mozuffierpore; Godavary; of *F.* sp., Peshawar and Dehra Dun.
- anthelmintica** Atkinson (Sacc. X:636; 457:262). On leaves of *Chenopodium ambrosioides*, Wahjain, Assam (Butler); Peshawar.
- apii** Fresen. (Sacc. IV:442; 111:315, fig.; 457:263). On leaves of *Apium graveolens*, Poona and Pusa.
- asparagi** Sacc. (Sacc. IV:477; 457:263). On leaves and stems of *Asparagus officinalis*, Solon (near Simla) and Pusa.
- batatae** Zimm. (Sacc. XVIII:605; 457:263). On leaves of *Ipomoea batatas*, Godavary and Pusa.
- beticola** Sacc. (Sacc. IV:456; 457:263). On leaves of *Beta vulgaris*, Pusa.
- biophyti** Syd. (457:263). On leaves of *Biophytum* sp., Samalkota.
- blumeae** Thuem. (Sacc. IV:445; 457:263). On leaves of *Blumea* sp., Nagpur, Pusa, Dehra Dun, and Samalkota.
- caladii** Cke (144:95; Sacc. IV:478). On drooping leaves of *Caladium* sp., Belgaum (Hobson);
- calotropidis** Ell. & Ev. (Sacc. XVI:1072; 457:263). On leaves of *Calotropis gigantea*, Pusa.
- cannabina** Wakef. (457:264). On leaves of *Cannabis sativa*, Peshawar; Godagiri, Bengal.
- capsici** Heald & Wolf (457:264). On leaves of *Capsicum annuum*, Pusa and Cawnpore.
- carthami** Sundar. & Ramak. (438:389, figs.). On leaves of *Carthamus tinctorius*, Coimbatore (Sundararaman and Ramakrishnan).



- [*Cercospora*] *catappae* P. Henn. (Sacc. XVIII:598; 457:264). On leaves of *Terminalia catappa*, Insein, Burma (Inayat).
- *cearae* Petch (Sacc. XXII:1421; 111:516, fig.; 113(3):54; 457:264). On leaves of *Manihot piauhyensis*, Kamalpur, Assam.
- *cleomis* Ell. & Halst. (Sacc. X:621; 457:264). On leaves of *Cleome* sp., Pusa. Saccardo spells the specific name "*cleomes*".
- *cocculi* Syd. (457:264). On leaves of *Cocculus villosus*, Pusa (Inayat).
- *coffeicola* Berk. & Cke (Sacc. IV:472; 111:485, figs.; 487:703; 113(9):67; 395; 457:265). On leaves and berries of *Coffea arabica*, Mysore (Thomas); Burma (Rhind); Dauracherra, Sylhet (Butler).
- *concors* (Casp.) Sacc. (Sacc. IV:449; 111:287, fig.). On leaves of *Solanum tuberosum*, Bengal, Pusa, and Poona (Butler).
- *cruenta* Sacc. (Sacc. IV:435; 111:261, fig.; 457:265). On leaves of *Phaseolus vulgaris*, Pusa; of *P. mungo* var. *radiatus*, Yelwigi in Dharwar District, and Gilgit; of *P. aconitifolius*, Jullundur, Punjab.
- *diodiae* Cke (Sacc. IV:441; 457:265). On leaves of *Spermacoce hispida*, Erramacolla and Panora, Wynaad.
- *dioscoreae* Ell. & Mart. (Sacc. IV:479; 457:265). On leaves of *Dioscorea* sp., Harwan, Kashmir (Butler); Nilphamari, Rangpur, Bengal.
- *dolichi* Ell. & Ev. (Sacc. X:622; 457:265). On leaves of *Dolichos lablab* and *D. typica*, Pusa.
- *euphorbiae* Kellerm. & Swingle (not in Sacc.; 457:265). On leaves of *Euphorbia* sp., Dehra Dun, Nadiad, and Surat; of *E. tirucalli*, Pusa; of *E. neriifolia*, Dohad, Bombay; of *Pedilanthus tithymaloides*, Pusa. There is a *C. euphorbiae* Patouill. (Sacc. XI:629), but Kellerman and Swingle published the name earlier (Journ. Myc., V:76).
- *foeniculi* P. Magn. (457:266). On leaves, peduncles, and stems of *Foeniculum vulgare*, Harwan, Kashmir and Pusa.
- *gloriosae* Syd. (457:266). On leaves of *Gloriosa superba*, Pusa (Kar).
- *gossypina* Cke (Sacc. IV:441; 111:369, fig.; 457:266). On leaves of *Gossypium* sp., Pusa, Cawnpore, and Lyallpur.
- *henningsii* Allesch. (Sacc. XIV:1104; 111:310, figs., as *Septogloeum manihotis* Zimm.; 311:32). On *Manihot utilissima*, Travancore (Butler).
- *hibisci* Tracy & Earle (Sacc. XIV:1099; 311:34; 457:266). On *Hibiscus sabdariffa* and *H. cannabinus*, Mandalay (Rhind); on leaves of *H. esculentus*, Pusa and Nagpur.
- *ipomoeae* Wint. (Sacc. X:633; 457:267). On leaves of *Ipomoea hederacea*, Dehra Dun and Pusa.
- *longipes* Butler (93:41, figs.; Sacc. XXII:1432; 111:405, fig.; 393:4; 457:267). On leaves of *Saccharum officinarum* throughout Northern India and Burma.



- [ *Cercospora* ] *menispermi* Ell. & Holw. (Sacc. X:618; 457:267). On leaves of *Menispermum cordifolia*, Pusa.
- *momordicae* McRae (457:267). On leaves of *Momordica charantia*, Pusa (Subramaniam).
- *morindae* Syd. (445:490). On leaves of *Morinda tinctoria*, Coimbatore (McRae).
- *neriella* Sacc. (Sacc. IV:473; 457:267). On leaves of *Nerium oleander*, Janakpur, Bihar.
- *nicotianae* Ell. & Ev. (Sacc. XI:628; 111:341, figs.; 2:26; 393:5; 457:267). On leaves of *Nicotiana tabacum* throughout India and Burma.
- *occidentalis* Cke (Sacc. IV:463; 457:267). On leaves of *Cassia occidentalis*, Mozufferpore and Pusa.
- *oryzae* Miyake (Sacc. XXII:1431; 105:35). On *Oryza sativa*, Burma (Butler).
- *pentaleuca* Syd. (445:490). On leaves of *Clitoria ternatea*, Coimbatore (McRae).
- *penzigii* Sacc. (Sacc. IV:466, 808; 457:268). On leaves of *Citrus* sp., Pusa.
- *personata* (Berk. & Curt.) Ell. & Ev. (Sacc. IV:439; 89:48; 110, figs.; 111:319, figs.; 395; 28, IV, figs.; 457:268). On leaves, petioles, and stems of *Arachis hypogaea* throughout India and Burma.
- *punicae* P. Henn. (Sacc. XXII:1418; 457:268). On leaves of *Punica granatum*, Orai, United Provinces.
- *punjabensis* Syd. (457:268). On leaves of *Vallisneria spiralis*, Naganwari, Pathankot, Punjab (Mitter).
- *rosicola* Thuem. (Sacc. IV:460; 457:268). On leaves of *Rosa* sp., Srinagar, Almora, and Dehra Dun; of *R. centifolia*, Tarnab near Peshawar, and Julundur; of *R. damascena*, Akbarpore, Peshawar.
- *rubi* Sacc. (Sacc. IV:461; 457:269). On leaves of *Rubus* sp., Verinag, Kashmir; of *R. ellipticus*, Dehra Dun.
- *sesbaniae* P. Henn. (Sacc. XXII:1419; 445:490). On leaves of *Sesbania grandiflora*, Coimbatore (McRae); of *S. acgyptiaca*, Pusa.
- *solanacea* Sacc. (Sacc. IV:449; 457:269). On leaves of *Solanum nigrum*, Pusa; of *S. melongena*, Renihennur in Bombay, and Pusa.
- *strychni* Syd. (457:269). On leaves of *Strychnos nux-vomica*, Bhubaneswar, Cuttack (Butler).
- *subsessilis* Syd. (457:269). On leaves of *Melia azedarach*, Dehra Dun, Pusa, and Coimbatore.
- *terminaliae* Syd. (457:270). On leaves of *Terminalia bellerica*, Nagpur (Pandit).
- *ternateae* Petch (Sacc. XXII:1419; 457:270). On leaves of *Clitoria ternatea*, Pusa, Chittagong, Khulna, Samalkota, and Orai, United Provinces.
- *theae* Breda de Haan (Sacc. XVIII:598; 89:47; 111:446, fig.; 503). On leaves of *Thea sinensis*, Assam (Butler); north east India (Tunstall).

- [*Cercospora*] *trichosanthis* McRae (457:270). On leaves of *Trichosanthes anguina*, Pusa (Subramaniam).
- *ubi* Racib. (Sacc. XVI:1073 ; 457:270). On leaves of *Dioscorea* sp., Chittagong.
- *vaginae* Krueger (Sacc. XIV:1106 ; 89:47 ; 93:43). On leaf sheaths of *Saccharum officinarum*. Reported from India but the records need confirmation.
- *vicoae* Syd. (457:270). On leaves of *Vicoa auriculata*, Dehra Dun (Butler).
- *viticola* (Ces.) Sacc. (Sacc. IV:458 ; 457:271). On leaves of *Vitis vinifera*, Achibal, Kashmir (Butler).
- *woodfordiae* Syd. (457:271). On leaves of *Woodfordia floribunda*, Puttimari, Kamrup, Assam (Taslin).
- Cercosporina ricinella* (Sacc. & Berl.) Speg. (Sacc. XXII:1432 ; 111:331, fig.). On leaves of *Ricinus communis*, Pusa (Butler).
- Cerebella andropogonis contortii* Subram. (423:205, fig.). On ovaries of *Andropogon contortus*, Maymyo, Burma and Dumraon, Bihar (Butler). This and other species of *Cerebella* apparently grow upon forms of *Sphacelia* on the various hosts.
- *antidotale* Subram. (423:206, fig.). On ovaries of *Panicum antidotale*, Sangla Hill, Punjab (Cheema).
- *burmanensis* Subram. (423:205, fig.). On ovaries of *Panicum setigerum*, Mandalay (Shaw).
- *cenchroidis* Subram. (423:206, fig.). On ovaries of *Pennisetum cenchroides* and *Cenchrus biflorus*, Lahore (Cheema).
- *cynodontis* Syd. (397 ; 423:207, fig.). On ovaries of *Cynodon dactylon*, Mysore and Sylhet (Butler); Mysore (Barber); on *Panicum prostratum*, Bihar (Butler); Burma (Rhind); on *P. distachyum*, Bassein, Burma (Butler: stated to be slightly different from the type in that the majority of the spores are smooth.)
- *inquinans* (Berk. & Broome) Petch (Sacc. VII:508 as *Thecaphora* ; 423:207, fig.). On *Paspalum scrobiculatum*, Bassein, Burma (Butler); on *P. longiflorum*, Sylhet (Butler); on *P. royleanum*, Ranchi (Butler); on *P. sanguinale* var. *ciliare*, Dacca (Kar); on *Panicum javanicum*, Ranchi (Butler).
- *nardi* Butler in Subram. (423:206, fig.). On glumes of *Andropogon nardus*, Mundanthorai, Tinnevely (Barber).
- *sorgi-vulgaris* Subram. (423:206, fig.; 14 ; 397). On ovaries of *Andropogon sorghum* (*Sorghum vulgare*), Rishivandayam, Madras (Barber); Poona (Ajrekar); Mandalay (Rhind); "common in Bombay and Madras" (Subramaniam).
- Cladosporium buteacolum* Cke (133:15, fig.; Sacc. IV:353 as *C. "butaeolum"*). On legumes of *Butea frondosa*, India (Hobson).
- *chodati* (Nechitsch) Sacc. (Sacc. XVIII:577 ; 355:22, figs., as *Dematium chodati* Nechitsch ; 267:150 ; 113(6):58). In the ferment used for rice-beer

brewing, Khasi Hills and elsewhere in north eastern India (Hutchinson and Ayyar). Placed by Berkhout in her new genus *Candida* (De Schimmeligeslachten *Monilia*, *Oidium*, *Oospora* en *Torula*. Thesis, Utrecht, 1923, p. 54).

[*Cladosporium*] *delicatum* Cke (133:17; Sacc. IV:361; 144:95). On dead leaves, Belgaum (Hobson).

— *fulvum* Cke (Sacc. IV:363; 89:46; 3:27). On leaves of *Lycopersicum esculentum*, ? Calcutta (Butler); Bombay (Ajrekar).

— *herbarum* (Pers.) Link (Sacc. IV:350; 144:95; 111:177, figs.; 363). On leaves and legumes of *Acacia* sp., Belgaum (Hobson); common throughout India on withering plant material, and frequent as a laboratory contamination.

— *puccinioides* Cke (133:15, fig.; Sacc. IV:361). On the lower surface of living leaves, India (Hobson). Stated by Cooke to be "certainly intermediate between *Cladosporium* and *Helminthosporium*".

— *scopiforme* Berk. (57, No. 471; Sacc. IV:358). On the lower surface of leaves of *Myristica "churra"*, Khasi Hills (Hooker f.).

— *subtile* Rabenh. (nomen nudum; Sacc. XI:621). On pods of *Leucaena glauca*, Calcutta. Specimens were distributed under this name in Rabenhorst's *Fungi Europaei*, No. 2364.

*Cladotrichum foliicola* (Niessl) Ferro (Sacc. XXII:1365; 387:176 as *Myrotrichum foliicolum* Niessl, nomen nudum). On leaves of *Bombax malabaricum*, Calcutta (Kurz).

— *glenosporoides* Sacc. (Sacc. IV:373; 132:117, figs., as *Glenospora didyma* Cke, not *Cladotrichum didymum* (K. & Schn.) Sacc. On fading leaves, Kolapore (Hobson).

*Clasterosporium maculatum* Cke (132:117, fig.; Sacc. IV:392). On leaves of *Ficus cordifolia*, Kolapore (Hobson).

*Coniosporium arundinis* Sacc. (Sacc. IV:243; 319, II:166). On *Thysanotachna agrostis*, Dehra Dun (Gamble).

— *donacis* (Niessl) Sacc. (Sacc. IV:243; 387:176 as *Gymnosporium donacis* Niessl). On fading leaves of *Arundo donax*, Calcutta (Kurz).

*Coniothecium chomatosporum* Cda (Sacc. IV:510; 113(10):79; 113(11):73). On twigs and fruits of *Pyrus malus*, Kumaon (Shaw).

*Epidermophyton inguinale* Sabouraud (6). This variable species, with several synonyms, occurs in "tinea cruris" of man in India, commonly known as Dhobie itch (Acton and McGuire).

*Exosporium palmivorum* Sacc. (Sacc. XVI:1106; 89:48). On leaves of *Phoenix humilis*, India (Butler).

*Fusarium caeruleum* (Lib.) Sacc. (Sacc. IV:705; 16, figs.; 514). The cause of dry rot of *Solanum tuberosum* in western India is thought by Ajrekar and Kamat to be nearer this species than *F. trichothecioides*, as suggested by Nagpurkar

and Kulkarni (Bombay Dept. Agric. Bull. 102, 1920), but Uppal (514) found both species to be present.

[*Fusarium*] *cubense* E. F. Sm. (259). Recorded on *Musa*, Bengal (Hector) and Madras.

— *lini* Bolley (Sacc. XVIII:670; 5:7; 113(18)). On *Linum usitatissimum*, India (S. N. Sil; McRae).

— *oxysporum* Schlecht. (Sacc. IV:705; 514). On *Solanum tuberosum*, Bombay (Uppal).

— *pannosum* Massee (319, I:117; Sacc. XVI:1098). On living trunks of *Cornus macrophylla*, Punjab, 7,000 ft. (Aitcheson).

— *radicicola* Wollenw. (16, figs.; 514). The cause of the wilt of *Solanum tuberosum* in western India is thought by Ajrekar and Kamat to be this species rather than *F. oxysporum* as suggested by Nagpurkar and Kulkarni (Bombay Dept. Agric. Bull. 102, 1920), and Uppal (514) found it to cause dry rot.

— *trichothecioides* Wollenw. (514). Recorded by Uppal on *Solanum tuberosum*, Bombay.

— *uncinatum* Wollenw. (525:54, pl. 237). On dry stems of *Cajanus indicus*, Pusa (Butler).

— *vasinfectum* Atkinson (Sacc. XXII:1481; 113(18); 335; 112:273; 283, figs.; 113(15):51; 101:54, figs., as *F. udum* Butler; 111:9, 244, figs.; 112:273; 13; 15; 113(5):64; 113(6):54; 113(15):56; 113(16):44; 113(17):45; 363). On roots and stems of *Cajanus indicus*, *Gossypium* spp., and *Sesamum indicum* throughout India. Wollenweber (Phytopath., III:38) changed the name *F. udum* to *F. butleri* because of an earlier *Pionnotes udum* Berk., which becomes *F. udum*, since *Pionnotes* is usually merged in *Fusarium*. It is now considered, however, that the fungi causing wilt in the three crops mentioned above must be included in Atkinson's *F. vasinfectum*, described in 1892. A special study was made of this fungus on cotton in India by Kulkarni and Mundkur (283).

*Fusicladium butleri* Syd. (443, XIV:260). On leaves of *Jasminum arborescens*, Orai, United Provinces (Butler).

*Glenospora uromycoides* Sacc. (403:20). On living leaves of *Memecylon edule*, Matheran, Bombay (Ajrekar).

*Gliocladium compactum* Cke & Massee (165:16; Sacc. X:528). On paper from India.

*Gonatobotryum dichotomum* Cke & Massee (165:15; Sacc. X:579). On damp, decomposing, amylaceous substances from India.

*Helminthosporium avenae* Eidam (Sacc. XXII:1393; 89:46; 111:183, figs.). Common on *Avena sativa* in India.

— *bambusae* Cke (182:91; Sacc. X:616). On *Bambusa spinosa*, Assam (Mann).

— *gramineum* Rabenh. (Sacc. X:615; 89:46; 111:186, figs.; 113(13):36; 113(16):41). On *Hordeum vulgare*, Pusa (Butler; Mitra).

- [*Helminthosporium*] *heveae* Petch (Sacc. **XXII**:1391; 344). On *Hevea brasiliensis*, Andaman Islands (Mittra).
- *nodulosum* Berk. & Curt. (Sacc. **IV**:421; 111:341, fig.). Common on *Eleusine coracana* in India (Butler).
- *obclavatum* Massee (319, **II**:166; Sacc. **XVI**:1063). On twigs of *Helicteres isora*, Siwalik Hills (Gamble). There is an earlier *H. obclavatum* Sacc. (see Sacc. **IV**:416).
- *oryzae* Breda de Huan (Sacc. **XXII**:1394; 514). On *Oryza sativa*, Upper Sind (Uppal). Probably this fungus described and figured, but not identified, by Sundararaman (427) as occurring in the Godavari and Kistna Deltas. It is probably prevalent throughout India.
- *sacchari* Butler (115:204, figs.; 111:7, 388, figs.; 113(13):35). On living leaves of *Saccharum officinarum*, Pusa.
- *sativum* Pammel, King, & Bakke (113(15):55; 113(16):41; 113(21):63). On *Hordeum vulgare* and *Triticum vulgare*, Pusa (Mittra; McRae). See *H. teres*.
- *teres* Sacc. (Sacc. **IV**:412; 111:189, figs.; 113(13):35; 113(16):41). On leaves of *Hordeum vulgare*, Pusa (Butler; McRae). Drechsler (Jour. Agric. Res., **XXIV**, p. 658, 1923) remarks that the earlier account of this fungus in India (111) failed to distinguish between it and *H. sativum*.
- *turcicum* Passerini (Sacc. **IV**:420; 111:201, fig.; 113(13):35; 342, figs.). On leaves and inflorescences of *Zea mays* throughout India, and on leaves of *Andropogon sorghum*, Punjab (Mittra). Wheat, barley, oats, and sugarcane were infected by inoculation.
- Hymenopsis cudraniae* Massee (319, **II**:167; Sacc. **XVI**:1105; 264, No. 405 as *Melasmia cudraniae* (Massee) v. Hoehn.). On living leaves of *Cudrania javanensis*, Dehra Dun (Gamble). Von Hoehn (l. c.) considers the fungus to be a non-typical *Melasmia*. Petch (373, **II**:314) states that his *Phaeodiscula cudraniae* is perhaps identical with *H. cudraniae*. *Sclerodiscus nitens* Patouill. (Journ. de Bot., **IV**:66, fig., 1890) is almost certainly the same fungus, and this is the earliest of these names.
- Isaria elata* (Kalchbr.) Sacc. & Trav. (Sacc. **XXII**:1442; 400:154, fig., as *Isotiale elata* Kalchbr.). Substratum not stated, Sikkim Himalaya (J. Remy).
- *farinosa* (Dicks.) Fr. (Sacc. **IV**:584; 263:342). On chrysalids, Arnigadh, Mussoorie (Gollan).
- [— *stellata* Cke (132:116; 134:4; Sacc. **IV**:586). Encrusting dead insects on under surfaces of mango leaves, Mysore. Lyle (The Entomologist, **LI**, No. 665, p. 227, 1918) thought the host possibly a species of *Prion*, but Petch (378, **II**:265), from an examination of the type, found the insect to be *Phenacoccus mangiferae*, and the supposed fungus to be the waxy projections common on leaf aphids in the tropics.]
- Metarrhizium anisopliae* Sor. (11 (16):49; 392:6). On grubs of *Oryctes rhinoceros* Burma.

*Monilia albicans* Robin (228). Isolated from man, Bombay. The genus *Candida* Berkhout should probably be used for the species of *Monilia* recorded here.

—*krusei* Castellani (228). Isolated from human patients, and from monkeys, India.

—*psilosis* Ashford (306 ; 228 as *M. ashfordi*). From human patients suffering from sprue, Bombay, and from monkeys.

*Mylitta* ? *lapidescens* Horaninow (Sacc. VIII:907 ; 58 ; 197, figs. ; 111:13 ; 262). Travancore (Waring) ; Nilgiris (Warburg) ; on the ground, Nilgiris (Butler). Petch (367, VII:147) considers that the Ceylon sclerotia of this type should be referred to *M. ligulata* Cesati, and that the south Indian form is more likely to be the latter than *M. lapidescens*, which is Chinese. The perfect stage is not definitely known in either species, although Hennings (262:20) follows Schroeter in placing *M. lapidescens* doubtfully in the genus *Omphalia*. In the Nilgiris the fungus is called "little man's bread".

*Nigrospora sphaerica* (Sacc.) Mason (Sacc. XXII:1490 as *Epicoccum hyalopes* Miyake ; 105:35 ; 392:2). On *Oryza sativa*, Burma (Butler ; Rhind). The synonymy of this fungus is discussed by E. W. Mason in Trans. Brit. Mycol. Soc., XII, pp. 152-165, 1927.

*Oedocephalum aurantiacum* Cke (138:147 ; Sacc. IV:48). On leaves of forest trees, associated with *Diplodia phyllostictae*, Mysore.

*Oidium carneum* Cke (144:94 ; Sacc. IV:42). "On leaves of Malvaceae, etc." Belgaum (Hobson).

—? *tingitaninum* Carter. Recorded by McRae (326:110, as *O. citri* Butler, a nomen nudum) on *Citrus aurantium*, Coonoor, Nilgiris. Petch (Phytopath., V:350 ; IX:266) points out that Berkeley (Gard. Chron., 1874, pp. 477-478) had early mentioned an *Oidium* on orange from India and Ceylon. Petch found the spores of the Ceylon mildew to differ considerably from the Californian as described by Carter.

*ospora citri-aurantii* (Ferrar.) Sacc. & Syd. (Sacc. XVI:1024). Not uncommon in fruits of *Citrus* spp.

—*lactis* (Fres.) Sacc. (Sacc. IV:15 ; 461 as *Oidium lactis* Fres.). In soil, Madras (Thakur and Norris).

—*maydis* P. Henn. (263:341 ; Sacc. XVIII:497). On rotten panicles of *Zea mays*, Botanic Garden, Saharanpur (Gollan).

*niellium digitatum* Sacc. (Sacc. IV:78 ; 486:245 ; 461). In soil, Madras (Thakur and Norris).

—*glabrum* (Wehmer) Westling (Sacc. XI:594 as *Citromyces glaber* Wehmer ; 461:145). In soil, Madras (Thakur and Norris).

—*glaucum* Link (Sacc. IV:78 ; 486:2 ; 461). In soil, Madras (Thakur and Norris).

—*oxalicum* Currie & Thom (486:247 ; 461). In soil, Madras (Thakur and Norris).

- [*Penicillium*] *tenellum* Cke (141:15; Sacc. IV:89). On fading leaves of *Symplocos*, Bengal. Thom (486:573) states that identification is impossible.
- *wortmanni* Kloecker (Sacc. XVIII:518; 486:449). From humus from the Himalayas.
- Piricularia oryzae* Cavares (Sacc. X:563; 105; 330; 113(14):44; 3:24; 392; 434). On *Oryza sativa* throughout India and Burma. Collections of *Piricularia* similar to that on rice have been obtained on *Eleusine coracana*, *Panicum repens*, *P. ramosum*, *Setaria italica*, *Paspalum* (*Panicum*) *sanguinale*, and *Triticum vulgare* in India, but whether or not they are distinct species is still undecided. Some of the forms are restricted in host range, but the form on rice will infect wheat, oats, and *Eleusine coracana* (McRae, 113(14):45). Nisikado (Ber. Ohara Inst. Landw. Forsch., I, 1917) separated the Japanese forms on *Panicum sanguinale* and *Setaria italica* as *P. grisea* and *P. setariae*, respectively.
- Pityrosporum ovale* Bizzozzero (Sacc. XXII:1336 as *Trichosporum*; 7 as *Malassezia ovalis*). In cases of "pityriasis capitis" of human patients, Calcutta (Acton and Panja).
- Ramularia areola* Atkinson (111:368, fig.). On leaves of *Gossypium* spp., Madras, Pusa, and Bombay (Butler). Mason (311:36) finds that *Cercosporiella gossypii* Speg. is an earlier name of this fungus.
- *viticis* Syd. (445:490). On leaves of *Vitex negundo*, Pollachi, Coimbatore (McRae).
- Rhinocladium corticolum* Massee (319, III:153; Sacc. XVIII:572; 28, IV:7, figs.). On bark of *Mangifera indica*, Poona (Woodrow); Bengal (Bal and Banerjee).
- Sclerographium atterimum* Berk. (57, No. 472, fig.; Sacc. IV:632). Hypophyllous on *Indigofera* ? *atropurpurea*, India (? Hooker f.).
- Sclerotium rolfsii* Sacc. (Sacc. XXII:1500; 326:110; 113(9):63; 5:8; 113(19); 334; 363; 393; 12; 513; 413:182, figs., erroneously as "*Rhizoctonia destruens*"). On *Solanum tuberosum*, *Arachis hypogaea*, *Piper betle*, *Amorphophallus campanulatus*, *Delphinium* sp., *Dianthus* sp., and *Medicago sativa*, Bengal and Bombay (Shaw and Ajrekar); on potato, Ganjam (McRae); Western India (Ajrekar); on *Arachis hypogaea*, *Cicer arietinum*, *Lens esculenta*, and *Triticum vulgare*, Burma (Rhind); on *Eleusine coracana*, India (McRae); on *Sesbania grandiflora*, South Arcot (McRae); on *Piper betle*, Bombay (Uppal).
- *oryzae* Cattaneo (Sacc. XIV:1153; 111:231, figs.; 105:34; 410, figs.; 392; 393; 113(5):57; 3:24; 363). In lower leaf sheaths and within the cavity of the stem of *Oryza sativa* throughout India and Burma.
- Spegazzinia meliolae* A. Zimm. (Sacc. XVIII:690; 403:303). Parasitic on mycelium of *Meliola ambigua* or related species on dead leaves of *Holarrhena antidysenterica*, Dacca (Som).

**Sphaelia sorghi** McRae (326:109; 14; 113(16):48; 399). On inflorescences of *Andropogon sorghum*, Coimbatore and Tinnevely (McRae); Burma (Robertson; Rhind). Ajrekar (14) found unidentified *Sphaelia* stages also on *A. caricosus* var. *mollicomus*, *Pennisetum alopecuroides*, and *Ischaemum pilosum*. Species of *Cerebella* interfere with the development of the sclerotia. *S. sorghi* causes the sugary disease of sorghum mentioned by Ajrekar (1:7; 2:18) as being common in the Bombay Presidency.

**Sporodesmium polymorphum** Oda (185, 1:7, figs.; Sacc. IV:501). On bark and wood, India.

**Sporotrichum beurmanni** Matruch. & Ramond (Sacc. XXII:1285; 2:51). As a cause of human abscesses, Goa (Fr. de Mello).

—**roseum** Link (Sacc. IV:106; 461:145). From soil, Madras (Thakur and Norris).

**Stilbum erythrocephalum** Dittm. (Sacc. IV:567; 196:129). On dead bamboo stems, Royal Botanic Garden, Calcutta (Kurz).

—**inconspicuum** Currey (196:129; 167:71 as *S. kurzianum* Cke; Sacc. X:682). On branches, Silpur, near Calcutta (Kurz). Currey's species was not entered in Saccardo, and Cooke copied the description with insignificant alterations, but for some reason gave it a new name.

—**lateritium** Berk. (Sacc. IV:571; 57, after No. 470; 263:341 as "*Stilbella lateritia*"). On bark, E. Nepal (Hooker f.); on dead bamboo, Botanic Garden, Saharanpur (Gollan).

—**nanum** Massee (318:112, fig.; Sacc. XVI:1082; 111:460; 89:17; 367, III:297). Recorded by Massee as on leaves and branches of living *Thea sinensis* and thought by him to be the fruiting stage of thread blight (see *Marasmius pulcher* above) but Petek (367, III:297, and 377:2) notes that it is a saprophyte most probably identical with *Stilbella heveae* Zimm. and *S. theae* Bernard.

**Trichoderma album** Preuss (Sacc. IV:60; 461). In soil, Madras (Thakur and Norris).

**Trichophyton ? rosaceum** Sabouraud (2:49). As a cause of human onychomycosis, Goa (Fr. de Mello).

—**viannai** De Mello (337:233, figs.; 2:50). As a cause of human skin disease, Goa (Fr. de Mello).

**Trichosporium aterrimum** Massee (319, II:167; Sacc. XVI:1052; 242). On the bark of *Morus indica*, Changa Manga, Punjab (Gamble). There is an earlier *T. aterrimum* (Oda) Sacc. (see Sacc. IV:289).

—**purpureum** Massee (319, II:167; Sacc. XVI:1052). On decayed wood, Dehra Dun (Gamble).

—**vesiculosum** Butler (90:490, figs.; Sacc. XXII:1356; 5:8). On bark and wood of *Casuarina equisetifolia*, Chatrapur, Ganjam (Butler); on *C. muricata*, India (Dalia).



- Tubercularia circinata** Lév. (235:67; Sacc. IV:646). On leaves of *Hoya coronaria* (*H. wallichiana*), India.
- maculicola** Sacc. (403:303). On dead leaves of *Capparis* sp., Pusa (Taslim).
- Verticillium glaucum** Bonord. (Sacc. IV:157; 461). In soil, Madras (Thakur and Norris).
- Volutella indica** (Niessl) Sacc. (Sacc. IV:687; 387:176 as *Psilonia indica* Niessl). On some kind of pod, Calcutta (Kurz).
- Xenosporella berkeleyi** (Curt.) Lindner (Sacc. IV:560 as *Helicosporium*). Stated by Lindner (Ann. Missouri Bot. Gard., XVI:319, 1929) to be "reported from India".

## SPHAEROPSIDALES AND MELANCONIALES.

- Aschersonia badia** Patouill. (Sacc. XIV:989; 196:130, figs., in part, as *Hypocrea variabilis* Currey; 375, II:239, 250). On [insects on] living leaves of bamboo, Yonah, Burma (Kurz). The specimens consisted, according to Petch (l.c), of this species and *Hypocrella mollis* (q.v.).
- Ascochyta citri** Penzig (Sacc. III:390; 456:195). On leaves of *Citrus medica*, Kumaon (Butler).
- dioscoreae** Syd. (456:195). On leaves of *Dioscorea* sp., Dehra Dun (Butler).
- gossypii** Syd. (456:194). On leaves of *Gossypium* sp., Kashmir (Inayat).
- phaseolorum** Sacc. (Sacc. III:398; 456:194). On leaves of *Phaseolus mungo* var. *radiatus* and *P. vulgaris*, Kashmir (Butler).
- pisi** Lib. (Sacc. III:397; 113(3):53; 456:194; 111:268, fig.). On leaves, branches, and pods of *Cicer arietinum*, Taru, near Peshawar (Robertson Brown); Punjab (Mohendra). The exact identity of the cause of gram blight in India, attributed to this fungus, is uncertain. It may be *Phyllosticta rabiei* (Pass.) Trotter. Petrak (Ann. Myc., XXII, p. 18, 1924) considers that *A. pisi* belongs to *Dilymella pinodes* (Berk. & Blox.) Petrak.
- rheea** (Cke) Grove (249:439 as *A. rheu* Grove; 144:93 as *Phoma rheea* Cke; Sacc. III:140). On stems of *Boehmeria nivea*, Assam.
- saccardiana** F. Tassi (Sacc. XIV:944; 456:194). On fallen pods of *Albizzia lebbek*, Pusa (Butler).
- Asterostomella balanseana** (Karst. & Roum.) Theiss. (Sacc. IX:390 as *Asterina*; 18:214). See entry under *Asterina lawsoniae*.
- Botryodiplodia diospyri** P. Henn. (263:341; Sacc. XVIII:333). On dead branches of *Diospyros embryopteris*, Botanic Garden, Saharanpur (Gollan).
- ficina** Syd. (456:202). On dead bark of *Ficus glomerata*, Pusa (Inayat).
- hypoxyloidea** (Cke) Sacc. (Sacc. III:379; 144:93 as *Diplodia hypoxyloidea* Cke). On bark of root of *Moringa*, Bengal.
- manihotica** Petrak (384:144; 456:202 as *B. manihotis* Syd., not *B. manihotis* (P. Henn.) Petrak). On bark of *Manihot utilisima*, Pusa (Inayat).
- nerii** Syd. (456:203). On branches of *Nerium odorum*, Pusa (Butler).

- Botryodiplodia persicae* Diedicke (456:202). On dead branches of *Prunus persica*, Pusa (Butler).
- saccharina* Diedicke (456:203). On dead culms of *Saccharum officinarum*, Pusa (Butler).
- theobromae* Patouill. (Sacc. XXII:1011 as *Lasiodiplodia theobromae* (Pat.) Griff. & Maubl.; 456:205; 89:47; 93:28; 111:445, figs.; 394:11; 113(17):50; 494:118; 495:86; 493:15, figs., as *Thyridaria tarda*, q.v.; 476; 395; 344; 421). On culms of *Saccharum officinarum*, Bihar (Butler); on *Cinchona* spp., Lower Burma (McRae); on roots of *Thea sinensis*, Assam (Butler); North East India (Tunstall); on *Hevea brasiliensis* stems, Burma (Rhind); Andaman Islands (Mitra). N. E. Stevens (421) suggests that this fungus may be the conidial stage of *Physalospora rhodina* (Berk. & Curt.) Cke, q.v.
- Uromyces staurophragmium* Tassi (460:20; Sacc. XVI:953). On dead pods and twigs of *Dalbergia sissoo*, India.
- Uromyces leucoxantha* Massee (319, I:116; Sacc. XVI:993). On living leaves of *Leucas hyssopifolia*, Dehra Dun (Gamble).
- Uromyces diospyri* Wint. (388:148; Sacc. III:280). On leaves of *Diospyros embryopteris*, Royal Botanic Garden, Calcutta (Kurz).
- Chaetomella atra* Fekl (Sacc. III:321; 456:194). On leaves of *Pennisetum* sp., Yelwal, Mysore (Butler). Petrak and Sydow (384:486) delete this genus, and state that this species will be reported upon later.
- furcata* Uke & Massee (170:43; Sacc. X:271). On coriaceous leaves, Sikkim. Petrak and Sydow (384:488) find that this is an old *Chaetomium*, perhaps *C. setosum*.]
- Uromyces cesatii* de Bary (Sacc. III:216; 456:190). A form on *Oridium* sp. on *Phaseolus mungo* var. *radiatus*, Pusa (Butler).
- Uromyces agaves* Cavara (Sacc. XI:570; 89:44; 111:374, fig.; 411, figs.). On living leaves of *Agave rigida* var. *sisalana*, Assam, Bengal, Cawnpore.
- atramentarium* (Berk. & Broome) Taubenh. (Sacc. III:227 as *Vermicularia*; 113(8):54). On roots and lower stem of *Solanum tuberosum*, Pusa (Butler); Ranchi (Dobbs).
- camelliae* Massee (Sacc. XVI:1007). See entry under *Glomerella cingulata*.
- capsici* (Syd.) comb. nov. (111:352, figs., as *Vermicularia capsici* Syd.; 208, figs.; 2:25; 431). On leaves, stems, and fruit of *Capsicum* spp., the following infected by inoculation: flowers and young fruit of *Carica papaya*, and fruit of *Vigna catjang*, *Dolichos lablab*, *Solanum melongena*, and *Citrus* sp., Bihar (Dastur); on *Capsicum*, *Solanum nigrum*, *S. anthocarpum*, *Datura fastuosa*, *Hibiscus esculentus*, and *Canavalia ensiformis*, Madras (Sundararaman); on *Capsicum*, Bombay (Ajrekar). Sundararaman (431) considers that cross-inoculation experiments indicate that *C. curcumae* is the same species.
- catechu* Diedicke (456:219). On leaves of *Areca catechu*, Chittagong (Sen).

- [*Colletotrichum*] *clerodendri* Diedicke (456:220). On living leaves of *Clerodendron infortunatum*, Malda (Butler).
- coffeanum* Noack (Sacc. XVIII:466). See entry under *Glomerella cingulata*.
- curcumae* (Syd.) comb. nov. (333 as *Vermicularia curcumae* Syd.; 430; 431; 326:110). On leaves of *Curcuma longa*, Kistna, Coimbatore, and Kurnool (McRae); Godavari and elsewhere in Madras (Sundararaman). The following can be infected by artificial inoculation: *Brassica* spp., *Solanum melongena*, *Capsicum annuum*, and *Withania somnifera* (Sundararaman). See *C. capsici* above.
- falcatum* Went (Sacc. XI:570; 89:46; 93:2, figs.; 111:391, figs.; 114, figs.; 277; 395). On leaves and culms of *Saccharum officinarum* throughout India and Burma.
- gloeosporioides* Penzig (Sacc. III:735; 344). On *Citrus aurantium* and *C. medica*, Andaman Islands (Mitra); and throughout India.
- gossypii* Southw. (Sacc. X:469). See entry under *Glomerella gossypii*.
- graminicolum* (Ces.) Wilson (29:283; 89:46; 93:13; 111:217, fig.; 392:2). On leaves of *Andropogon sorghum* throughout India and Burma.
- heveae* Petch (Sacc. XXII:1203; 344). On *Hevea brasiliensis*, Andaman Islands (Mitra).
- jatrophae* (Speg.) comb. nov. (Sacc. XXII:940 as *Vermicularia jatrophae* Speg.; 28, III:31, figs.). On leaves of *Jatropha integerrima*, Calcutta (Bal).
- lindemuthianum* (Sacc. & Mag.) Br. & Cav. (Sacc. III:717 as *Gloeosporium*; 111:256, 267, figs., as *Glomerella lindemuthiana*). On *Phaseolus vulgaris*, northern India and Nilgiris.
- necator* Massee (434; 319, XIII:190). On *Piper nigrum*, Madras (McRae).
- nigrum* Ell. & Hals. (Sacc. XXII:1203; 111:356). On *Capsicum annuum*, Burma. This may be *Glomerella cingulata*, q.v.
- punctiforme* (Niessl) comb. nov. (388:146 as *Vermicularia punctiformis* Niessl; Sacc. III:231). On *Oxalis stricta* and *O. corniculata*, Royal Botanic Garden, Calcutta (Kurz).
- zingiberis* (Sundarar.) comb. nov. (428, figs., as *Vermicularia zingiberis* Sundarar.; 431). On leaves, petioles, and rhizomes of *Zingiber officinale*, Amalapur, Godavari (Sundararaman).
- Coniothyria agaves* (Dur. & Mont.) Petrak & Syd. (384:322; Sacc. III:318 as *Coniothyrium agaves* (Dur. & Mont.) Sacc.; 456:193). On leaves of *Agave* sp., Bilikere, Mysore (Butler).
- Coniothyrium coffeae* A. Zimm. (Sacc. XVIII:310; 456:193). On leaves of *Coffea liberica*, Wynaad (McRae). (See 384:356 for *C. coffeae* P. Henn., which was described later).
- indicum* Cke & Massee (167:70; Sacc. X:265). On twigs of *Salix*, Hindu Kush, 11,500 ft. (Gilgit Expedition, possibly collected outside of India),

- Petrak and Sydow (384:319) give a detailed account of this fungus, which they think will form the type of a distinct genus when more fully studied.
- [*Coniothyrium*] *palmicolum* (Fr., pro parte) Starb. (418:78, figs.; Sacc. XI:515). On palm leaves, Nicobar Islands (Didrichsen). This fungus was included by Fries (237, II:466) in *Sphaeria palmicola*, without locality.
- Cryptosporium calami* Niessl (387:176; Sacc. III:744). On leaves of *Acorus calamus*, Royal Botanic Garden, Calcutta. Saccardo states that the specimen (Fungi Europ. 2454) he examined consisted of a *Pestalozzia*.
- Cylindrosporium oxyacanthae* (Kze & Schm.) Diedicke (Sacc. III:578 as *Phleospora*; 456:220). On leaves of *Crataegus* sp., Harwan, Kashmir (Inayat).
- Cytospora* ? *atra* (Bon.) Sacc. (Sacc. III:257; 456:192; 250:7). On branches of *Morus alba*, Harwan, Kashmir (Butler).
- *bambusina* Diedicke (456:193). On dead stems of *Bambusa* sp., Pusa (Butler).
- *cedri* Syd. & Butler (456:193). On branches of *Cedrus libani* var. *deodara*, Kulu. Associated with *Stagonospora cedri*.
- *chrysosperma* (Pers.) Fr. (Sacc. III:260; 456:192; 250:9). On branches of *Populus ciliata*, Harwan, Kashmir (Butler).
- *citri* Diedicke (456:193). On living or fading leaves of *Citrus* sp., Pusa (Mitter).
- *sacchari* Butler (93:30, figs.; Sacc. XXII:962; 456:193). On culms and sheaths of *Saccharum officinarum*, Madras and Central Provinces (Butler). Petrak (383:316) suggests that this may be the same as his *Lecina philippinensis*.
- *salicis* (Cda) Rabenh. (Sacc. III:261; 456:192; 250:24). On branches of *Salix alba*, Achibal, Kashmir (Inayat).
- Darlucia filum* (Biv.) Cast. (Sacc. III:410; 403:301). On uredo of *Puccinia ?polygoni-amphibii* on *Polygonum* sp., Mussoorie (Kar).
- Dendrophoma jasmini* Syd. (456:187). On dry branches of *Jasminum arborescens*, Pusa (Mitra), associated with *Microdiplodia jasmini*.
- Dinemasporium graminum* (Berk.) Lév. (Sacc. III:682; 185, III:29, fig., as *Eschpula graminum* Berk.). On grasses, India.
- *hispidulum* (Schröd.) Sacc. (Sacc. III:685; 456:217). On young, dead stem of *Thea sinensis*, Duars (Mann).
- Diplodia andamanensis* Oke (143:95; Sacc. III:370). On stems of a creeping plant (vernacular "Pilita Dak"), Andaman Islands.
- *arachidis* Petch (Sacc. XXII:994; 456:199). On stems of *Arachis hypogaea*, Pusa (Butler).
- *bambusina* Diedicke (456:201). On dead stems of *Bambusa* sp., Pusa (Sen).
- *butleri* Syd. (456:199). On dead branches of *Morus alba*, Harwan, Kashmir (Butler).
- *calami* Niessl (387:176; Sacc. III:372; 456:200). On leaves of *Calamus* sp., Cawnpore (Butler).

- [*Diplodia*] *calecutiana* Tassi (460:10, fig.; Sacc. XIV:937). On rotting fruits of *Ficus altissima*, "Calceuti" [(?) Calcutta], India.
- *catappae* Cke (132:114; Sacc. III:343). On nuts of *Terminalia catappa*, Pondicherry.
- *catechu* Syd. & Butler (456:200). In the inflorescence of *Areca catechu*, Coimbatore (Butler).
- *citrina* Diedicke (456:197). On roots of *Citrus medica*, Sholapur, Bombay (Chibber).
- *corchori* Syd. (456:196; 113(10):74; 113(11):69; 412 (1), figs.). On stems of *Corchorus capsularis* and *C. olitorius*, Pusa, North Bihar, Kamrup, and various parts of Eastern Bengal and Assam (Shaw).
- *dalbergiae* Diedicke (456:198). On dead branches of *Dalbergia sissoo*, Pulliyanur, Travancore (Butler).
- *dracaenicola* Diedicke (456:200). On languishing leaves of *Dracaena* sp., Pusa (Dastur). Petrak and Sydow (384:139) state that this is certainly a *Botryodiplodia*, and probably a small spored form of *B. drucarnicola* (P. Henn.) Pet. & Syd.
- *embryopteridis* Cke (140:117; Sacc. III:361). On fruit of *Diospyros embryopteris* (*Embryopteris glutinifera*), Midnapore, Bengal.
- ? *eribotryae* Sacc. (Sacc. III:362; 456:196). On living leaves of *Eriobotrya japonica*, Pusa, and Orai, United Provinces (Butler).
- *gossypina* Cke (143:95; Sacc. III:366). In old capsules of *Gossypium*, Bombay.
- *hibiscina* Cke & Ellis (Sacc. III:330; 456:198). On stems of *Hibiscus cannabinus*, Dacca (Som); Cuttaock (Butler).
- *indica* Diedicke (456:197). On bark of *Citrus aurantium*, Poona (Chibber).
- ? *indigoferae* P. Brun. (Sacc. XIV:930; 456:198). On dead stems and roots of *Indigofera arrecta*, Pusa (Butler); Bihar (Annett).
- *manihotis* Sacc. (456:197). On fruits of *Manihot utilissima*, Poona (Leather); on stems of same host, Poona (Chibber).
- *mori* West. (Sacc. III:351; 456:199). On branches of *Morus* sp., Pusa (Butler); Wazirabad, Punjab (Mitter).
- *morina* Syd. (456:199). On dead branches of *Morus* sp. cult., Pusa (Butler).
- *musae* Diedicke (456:200). On dead fruits of *Musa sapientum*, Wahjain, Assam (Butler).
- *papayae* Thuem. (488:36; Sacc. III:350; 456:198). On dead branches of *Carica papaya*, Malabar (Keek); perhaps this species on bark of the same host, Pusa (McRae); Dacca (Som). These later collections cannot be identified with certainty with Thuemen's species in the absence of material of the latter. They are perhaps to be referred to *Botryodiplodia*.
- *pedilanthi* Syd. (456:197). On dead stem of *Pedilanthus tithymaloides*, Pusa (Inayat).

- [*Diplodia*] *phyllostictae* Cke (138:147; Sacc. III:364). On leaves of forest trees, associated with *Oedocephalum arantiacum*, Mysore.
- *pithecolobii* Diedicke (456:199). On bark of *Pithecolobium* sp., Pusa (Subramaniam).
- *rheea* Cke (144:94; Sacc. III:369). On stems of *Boehmeria nivea*, Assam.
- *ricinicola* Sacc. (456:193; 403:308). On stems of *Ricinus communis*, Pusa (Butler); Bellary (Burkill).
- *sansevieriae* Syd. (456:200). On leaves of *Sansevieria* sp., Pusa (Inayat).
- *sycina* Mont. (Sacc. III:350; 456:198). On bark of *Ficus glomerata*, Pusa (Butler).
- *variispora* Diedicke (456:196). On leaves of *Eugenia jambolana*, Hunsur, Mysore (Butler).
- Diplodina butleri* Diedicke (456:195). On languishing leaves of *Stipa* sp., Harwan, Kashmir (Butler).
- *pedilanthi* Syd. (456:195). On stems of *Pedilanthus tithymaloides*, Pusa (Butler).
- Diplozythiella bambusina* Diedicke (456:215; 3:29). On fading leaves of *Bambusa* sp., Dehra Dun (Butler); Central Provinces (Pearl). Pearl (3:29) reported that the perfect stage appeared to be a new genus of the Hypocreaceae.
- Dothiorella himalayensis* Diedicke (456:218). On living leaves of *Rhododendron campanulatum*, Ranikhet, Kumaon (Inayat).
- *mangiferae* Syd. (456:192). On dead branches, with bark, of *Mangifera indica*, Lucknow (Bahadur).
- Entomosporium maculatum* Lév. (Sacc. III:657; 456:219). On living leaves of *Pyrus communis*, Kashmir (Inayat); of *P. pashia* and *Cydonia vulgaris*, Achibal, Kashmir (Butler).
- Ephelis japonica* P. Henn. (Sacc. XVIII:446; 456:217). On inflorescences of *Paspalum kora*, Sylhet (Butler). Apparently the same species occurs on ? *Eragrostis* sp. in the same locality, and perhaps the same species on *Panicum sanguinale*, Dacca (Som). A specimen on *Cymbopogon martini* var. *sofia*, Dharmpur, Punjab (Burkill) is not well developed, but seems to be a distinct species.
- *oryzae* Syd. (445:489; 456:218; 326:109; 2:21; 5:6). On the inflorescence of *Oryza sativa*, Poona (Mitra); Madras (McRae; Sydow, Fungi exot. exsicc. 439); Nagpur (Dastur).
- Fusicoccum jatrophae* Syd. (456:192). On bark of *Jatropha curcas*, Dehra Dun (Butler).
- Gloeosporium ampelophagum* (de Bary) Sacc. (Sacc. III:719; 89:46; 3:33). On *Vitis vinifera*, Poona.
- *kurzianum* Niessl (387:176; Sacc. III:705; 402:541; Sacc. Fungi Italici fig. 1020). On some member of the Leguminosae, Royal Botanic Garden, Calcutta (Kurz).

- [*Gloeosporium*] *musarum* Cke & Massee (Sacc. **X**:461; **201**, figs.). On fruits of *Musa paradisiaca* throughout India.
- paradoxum* (de Not.) Fekl (Sacc. **III**:707; **456**:219). On leaves of *Hedera helix*, Harwan, Kashmir (Butler).
- piperatum* Ell. & Ev. (Sacc. **XVI**:453 as *Gnomoniopsis*; **393**:5). On *Capsicum* sp., Mandalay, Burma (Rhind). See *Glomerella cingulata*.
- terminaliae* Syd. & Butler (**456**:219). On leaves of *Terminalia catappa*, Insein, Burma (Butler).
- Haplosporella mangiferae* (Died.) Petrak & Syd. (**384**:102; **456**:205 as *Cytosphaera mangiferae* Diedicke). On dead branches of *Mangifera indica*, Lucknow (Bahadur). See also *Pleosphaeropsis*.
- Hendersonia creberrima* Syd. & Butler (**456**:208, figs.). On ripe fruit of *Mangifera indica*, Pusa (Butler). The fungus appears to be the cause of a ripe rot.
- heraclei* Sacc. (Sacc. **III**:432; **456**:207). On living leaves and stems of *Heracleum* sp., Harwan, Kashmir (Butler).
- minutissima* Sacc. (Sacc. **III**:437; **387**:176 as *H. microscopica* Niessl, not Fr.). On *Apluda nutica*, Royal Botanic Garden, Calcutta. Stated by Niessl to be the macrostylosporous form of a *Leptosphaeria*.
- obtusa* Cke (**139**:20; Sacc. **III**:423; **132**:115 as *H. lonicerae* Cke, not Fr.). On twigs of *Lonicera diversifolia*, Saharanpur (Dr. Jameson).
- tamarindi* Syd. (**456**:209). On living leaves of *Tamarindus indica*, Mozufferpore (Butler).
- theicola* Cke (**129**:90 as *H. "theaeicola"*; Sacc. **III**:427). On leaves of *Thea sinensis*, Cachar.
- Hendersonina sacchari* Butler (**115**:191, figs.; **456**:209; **113** (17):51; **111**:388, figs.). On culms of *Saccharum officinarum*, Samalkota (Butler); Jorhat (Meggit); Bihar (McRae).
- Lasmeniella globulifera* (Rabenh.) Petrak & Syd. (**384**:303; **387**:60 as *Coniothyrium globuliferum* Rab.; Sacc. **III**:308; **264**, No. 744 as *Lasmenia globulifera* (Rab.) v. Hoehn.; **456**:194). On leaves of *Bauhinia vahlii*, Royal Botanic Garden, Calcutta (Kurz); Bhim Tal, Kumaon (Inayat). See also *Phyllachora bauhiniae*.
- Leptothyrium leguminum* (Cke) Sacc. (Sacc. **III**:632; **144**:93 as *Leptostroma leguminum* Cke). On legumes of *Clitoria* sp., Madras (? Hobson).
- pomi* (Mont. & Fr.) Sacc. (Sacc. **III**:632; **113** (11):74). On fruits of *Pyrus malus*, Kumaon (Shaw).
- Macrophoma boussingaultiae* Syd. & Butler (**456**:187). On living leaves of *Boussingaultia baselloides*, Kistna, Madras (Mitra). Petrak and Sydow (**384**:115) propose to restrict the genus *Macrophoma* to the single species *M. pinca* (Desm.) Pet. & Syd. Under their classification the species listed here would require to be transferred to other genera, which has not yet been done.



- [**Macrophoma**] **calophylli** Syd. (456:188). On living or fading leaves of *Calophyllum inophyllum*, Kistna, Madras (Subramaniam).
- **caryotae** Syd. (456:189). On leaves of *Caryota urens*, Poona (Chibber).
- **cassiocarpa** (Cke) Berl. & Vogl. (Sacc. X:203; 144:93 as *Sphaeropsis cassiicarpum* Cke; Sacc. III:147 as *Phoma cassiicarpa* (Cke) Sacc.). On legumes of *Cassia absus* and *Clitoria* sp., Madras.
- **celastrina** Diedicke (456:188). On living leaves of *Celastrus* sp., Pusa (Butler).
- **clitoricarpa** (Cke) Berl. & Vogl. (Sacc. X:197; 144:93 as *Sphaeropsis clitorae-carpum* Cke; Sacc. III:147 as *Phoma clitoricarpa* (Cke) Sacc.). On legumes of *Clitoria* sp., Madras (Bidie).
- **musae** (Cke) Berl. & Vogl. (Sacc. X:199; 89:48; 456:189; 467:153; 144:93 as *Sphaeropsis?* *musarum* Cke; Sacc. III:163 as *Phoma musae* (Cke) Sacc., not *P. musarum* Cke; 274:489 as *Dothidea musae* Klotz.; 51:398; Sacc. II:613 and 625 as *Phyllachora musae* (Klotz.) Sacc.). On leaves of *Musa* sp., India (Wight); of *M. paradisiaca*, Belgaum (Hobson); of *M. sapientum*, Anand, Bombay (Blatter); Dehra Dun, Pusa, Coimbatore, and Tellicherry in Malabar (Butler). Theissen and Sydow (481:570) examined the type of *Dothidea musae* Klotzsch and found it was this *Macrophoma*; Cooke's statement (Grev., XIII, p. 64) "asci clavate" was presumably an error.
- **phaseolina** Tassi (Sacc. XVIII:268; 456:189). On living leaves of *Vigna catjang*, Pusa (Subramaniam).
- **piperina** Syd. (456:188). On fading leaves of *Piper nigrum*, Sylhet (Butler).
- **sycephila** (Masse) Sacc. & D. Sacc. (Sacc. XVIII:273; 456:198). On fading leaves of *Ficus religiosa*, Kangra (Mitter).
- Macrophomina phaseoli** (Maubl.) Ashby (22:145, fig.; 334; 113(21); 434; 409:119, figs., as "*Rhizoctonia solani*"; 413:191; 5:8 as *Sclerotium bataticola* Taub.; 456:187 as *Macrophoma cajani* Syd. & Butler; 385:227 as *Dothiorella cajani* (Syd. & Butl.) Petrak & Syd.; 412(2), figs., as *Macrophoma corchori* Saw.; 113(12)). On *Solanum tuberosum*, *Gossypium* spp., *Corchorus capsularis*, *O. olitorius*, *Cajanus indicus*, *Arachis hypogaea*, *Alysicarpus* sp., *Carica papaya*, *Citrullus vulgaris*, *Crotalaria juncea*, *Cucurbita maxima*, *Dolichos biflorus*, *D. lablab*, *Hibiscus cannabinus*, *Lycopersicum esculentum*, *Medicago sativa*, *Morus alba*, *Nicotiana tabacum*, *Phaseolus lunatus*, *P. mungo* var. *radiatus*, *Sesamum indicum*, *Solanum melongena*, and *Vigna catjang*, as a root, stem, and tuber parasite throughout India. Haigh (255) has recently described within this species three groups, based on size of sclerotia, and reports that pycnidia have been connected only with the group with the smallest sclerotia. Petrak and Sydow (385:227; 384:217) have abandoned the former's genus *Macrophomina* which was founded on this species on *Sesamum* in the Philippines, regarding it as synonymous with *Dothiorella*.



- Microdiplodia agaves** (Niessl) Tassi (Sacc. XVIII:323; 387:176 as *Diplodia agaves* Niessl; Sacc. III:371; 456:200). On leaves of *Agave americana*, India (Kurz); of *A. sp.*, Dharwar and *Yucca aloifolia*, Shillong and Pusa (Butler). Petrak (383:218) suggests that this is the pycnidial stage of his *Pleospora butaanensis*. He found also that Niessl's fungus was a *Microdiplodia*, but overlooked Tassi's earlier combination.
- indica** Syd. (456:201). On living leaves of *Iris* sp., Srinagar, Kashmir (Butler).
- jasmini** Syd. (456:201). On dry branches of *Jasminum arborescens*, Pusa (Mittra), associated with *Dendrophoma jasmini*.
- Micropera dahliae** Diedicke (456:214). On dead stem of *Dahlia variabilis*, Pusa (Dastur).
- Microstroma juglandis** (Bereng.) Sacc. (Sacc. IV:9; 455:280). On leaves of *Juglans regia*, Kumaon Himalaya (Butler). The systematic position of this fungus is uncertain. Some have considered it to be a Basidiomycete near *Exobasidium*, but it is apparently one of the Fungi Imperfecti. Saccardo and others consider it to belong to the Mucedineae, while Maire, Briosi and Cavara, and Karakulin refer it to the Melanconiaceae, an opinion supported by the most recent study of the fungus by F. A. Wolf in Journ. Elisha Mitchell Sci. Soc., XLV, pp. 130-136, 1929.
- Pestalozzia funera** Desmaz. (Sacc. III:791; 456:220; 326:110). On leaves of *Cunninghamia sinensis*, Dehra Dun (Butler); of *Eucalyptus globulus*, near Coonoor, 5,000 ft. (McRae).
- fuscescens** Sorauer (Sacc. XXII:1227). On young plants of *Livistona (Corypha) australis* exported from India.
- mangalorica** Thuem. (488:37; Sacc. III:790). On living leaves of *Bridelia scandens*, Mangalore (Keck).
- palmarum** Cke (132:115; Sacc. III:796; 96:21; 2:27; 344). On *Cocos nucifera*, Bengal; Travancore (Butler); Madras (McRae); Andaman Islands (Mittra).
- phoenicis** Vize (133:14, 17, figs.; Sacc. III:796). On leaves of *Phoenix dactylifera*, ?India (? Hobson).
- theae** Sawada (111:451, fig.; 507; 497:40; 393:4; 503; 318:106 as "*P. guipini* Desm."). On leaves of *Thea sinensis*, Assam, Bengal, and Madras.
- Phleospora mori** (Lév.) Sacc. (Sacc. III:577; 456:214; 98:11 as *Septogloeum mori* (Lév.) Briosi & Cav.). On leaves of *Morus alba*, Dubgaon, Kashmir (Butler).
- Phoma casuarinae** Tassi (Sacc. XIV:885; 456:186). On leaves of *Casuarina* sp., Karwar (Butler).
- causcorae** Rabenh. (387:176; Sacc. III:131). On stem of "*Causcora decussata*", Royal Botanic Garden, Calcutta (Kurz).
- desmonci** Rabenh. (387:60; Sacc. III:157). On leaves of *Desmoncus "melanocheilus"*, Royal Botanic Garden, Calcutta.

- [**Phoma**] **foedata** (Lév.) Sacc. (Sacc. III:104; 285:63 as *Sphaeropsis foedata* Lév.).  
On leaves of *Hoya coronaria* (*H. wallichiana*), India.
- **foureroyae** Thuem. (Sacc. III:160; 456:186). On leaves of *Furcraya* (*Fourcroya*) **gigantea**, Shillong (Butler).
- **glumarum** Ellis & Tracy (Sacc. X:185; 89:46; 105:35; 456:187). On glumes of *Oryza sativa* throughout India.
- **keckii** (Thuem.) Sacc. (Sacc. III:90; 488:37). On stems of *Calotropis gigantea*, Kanara (Keck).
- **oryzae** Cke & Massee (185:15; Sacc. X:185). On stems of *Oryza sativa*, Calcutta.
- **pardanthi** Diedicke (456:186). On dry stems of *Pardanthus chinensis* (= *Belamcanda punctata*), Pusa (Butler).
- **polyanthis** Diedicke (456:186). On dead leaves and stems of *Polianthes tuberosa*, Pusa (Inayat).
- **saccharina** Syd. (456:187; 393:5). On culms of *Saccharum officinarum*, Pusa (Butler); Mandalay (Rhind).
- **salicina** West. (Sacc. III:97; 456:186). On branches of *Salix* sp., Achibal, Kashmir (Butler).
- **solani** Cke & Hark. (Sacc. X:175; 257). Recorded as injurious to *Solanum melongena*, Comilla, Bengal (Hector).
- Phomopsis artabotrydis** Syd. (456:191). On living leaves of *Artabotrys odoratissimus*, Poona (Chibber).
- **cajani** Syd. (456:191). On dead branches of *Cajanus indicus*, Pusa (Butler).
- **heteronema** Sacc. (403:17). On epicarp of *Areca catechu*, Portuguese East Indies [? India] (comm. Alfr. Moller).
- **pandani** Diedicke (456:191). On leaves of *Pandanus* spp., Poona (Chibber).
- Phyllosticta ambrosioides** Thuem. (Sacc. III:55; 456:184). On leaves of *Chenopodium album*, Mussoorie (Mitra).
- **buddleiae** Syd. (456:183). On living leaves of *Buddleia* sp., Debra Dun (Butler).
- **buteae** Syd. (456:180). On living leaves of *Butea frondosa*, Pusa (Subramaniam).
- **cajani** Syd. (456:178). On leaves of *Cajanus indicus*, Mozufferpore (Butler).
- **capparidicola** Speg. (Sacc. XVIII:824; 456:182). On leaves of *Capparis* sp., Burdwan (Butler).
- **catappae** Syd. (456:181). On leaves of *Terminalia catappa*, Maymyo (Butler).
- **chrysanthemi** Ell. & Dearn. (Sacc. XI:479; 456:177). On leaves of *Chrysanthemum* sp., Pusa (Butler).
- **clerodendri** Syd. & Butler (456:183). On living leaves of *Clerodendron* sp., Nadiad, Bombay (Butler).
- **cocculi** Thuem. (488:36; Sacc. III:29). On living or languishing leaves of *Anamirta cocculus*, Kanara (Keck).
- **cocos** Cke (144:94; Sacc. III:59; 456:185). On leaves of *Cocos nucifera*, Belgaum (Hobson). Apparently the same species on leaves of *Caryota* sp., Dacca (Som).

- [*Phyllosticta*] *codiaecicola* Diedicke (456:184). On leaves of *Codiaeum* sp., Ganeshkhind, Poona (Mitra).
- ? *coffeicola* Speg. (Sacc. XIV:857; 456:182; not *P. coffeicola* Delacr., Sacc. XVIII:237). On leaves of *Coffea arabica*, Koppa, Mysore (Butler).
- *cycadina* Passerini (Sacc. X:124; 456:185). On leaves of *Cycas revoluta*, Poona (Chibber).
- *desmodiicola* Diedicke (456:178). On leaves of *Desmodium* sp., Mussoorie (Mitra).
- *diospyri* Syd. & Butler (456:183). On living or fading leaves of *Diospyros embryopteris*, Pusa (Butler). An *Ascochyta* occurs in similar pycnidia on the same spots.
- *dolichi* Brun. (Sacc. XI:478; 456:177). On leaves of *Dolichos biflorus*, Pusa (Butler).
- *eriodendri* Diedicke (456:179). On leaves of *Eriodendron anfractuosum*, Ganeshkhind, Poona (Mitra).
- *exigua* Syd. (456:183). On leaves of *Quercus* sp., Kumaon (Butler).
- *glycines* Thuem. (Sacc. III:11; 456:178). On leaves of *Glycine hispida*, Verinag, Kashmir (Butler).
- *glycosmidis* Syd. & Butler (456:177; 28, III:33, figs.). On living leaves of *Glycosmis pentaphylla*, Dehra Dun (Butler); Wahjain, Assam (Som); Calcutta (Chowdhuri).
- *grewiae* Diedicke (456:181). On leaves of *Grewia* sp., Dehra Dun (Butler).
- *hibisci* Peck (Sacc. X:103; 456:182). On leaves of *Hibiscus cannabinus*, Cuttack (Butler).
- *hortorum* Speg. (Sacc. III:49; 456:184). On leaves of *Solanum melongena*, Achibal, Kashmir (Inayat); Surat (Butler).
- *hoyae* Diedicke (456:180). On leaves of *Hoya* sp., Pusa (Inayat).
- *humuli* Sacc. & Speg. (Sacc. III:53; 456:184). On leaves of *Humulus lupulus*, Dubgaon, Kashmir (Butler).
- *ingae-dulcis* Diedicke (456:178). On leaves of *Pithecolobium (Inga) dulce*, Cocanada (Butler).
- *ipomoeae* Ell. & Kollerm. (Sacc. X:127; 456:182). On leaves of *Ipomoea* sp., Kirkee, Poona (Mitra).
- *marmorata* Cke (145:13; Sacc. III:36; 456:182). On leaves of *Mallotus philippinensis*, Saharanpur (Duthie); Dehra Dun (Butler).
- *murai* I.Miyake (Sacc. XXII:864; 456:185). On leaves of *Oryza sativa*, Meharpur, Bengal (Butler).
- *persicae* Sacc. (Sacc. III:8; 456:184). On leaves of *Prunus persica*, Darjeeling (McRae).
- *pirina* Sacc. (Sacc. III:7; 456:184). On leaves of *Pyrus communis*, Lyallpur (Butler); Darjeeling (McRae).

- [*Phyllosticta*] *pongamiae* Syd. (456:178). On leaves of *Pongamia glabra*, Dacca (Som).
- prunicola* (Opiz?) Sacc. (Sacc. III:4; 456:184). On leaves of *Prunus armeniaca*, Achibal, Kashmir (Butler); of *P. avium* and *P. communis*, Verinag, Kashmir (Butler).
- religiosa* Syd. (456:183). On leaves of *Ficus religiosa*, Poona (Chibber).
- sesbaniae* Syd. (456:179). On leaves of *Sesbania* sp., Pusa (Butler).
- sissoo* Diedicke (456:179). On leaves of *Dalbergia sissoo*, Pusa (Butler).
- sorghina* Sacc. (Sacc. III:61; 456:185). On leaves of *Andropogon sorghum* (*Sorghum vulgare*), Manaparai, Trichinopoly (Butler).
- symploci* Syd. (456:180). On leaves of *Symplocos* sp., Nilgiris (Butler).
- tectonae* Syd. & Butler (456:181). On leaves of *Tectona grandis*, Puttinar, Assam (Taslim).
- tricoloris* Sacc. (456:182; Sacc. III:38 as form). On leaves of *Viola odorata*, Ganeshkhind, Poona (Butler).
- Phyllostictina arecae* (Diedicke) Petrak & Syd. (384:188; 456:185 as *Phyllosticta arecae* Died.). On leaves of *Areca catechu*, Bilin, Burma (Butler).
- artocarpina* (Syd. & Butler) Syd. (384:189; 456:180 as *Phyllosticta artocarpina* Syd. & Butl.). On leaves of *Artocarpus integrifolia*, Bombay Presidency (Chibber). See *Septoria artocarpae*.
- cruenta* (Fr.) Petrak & Syd. (384:209; Sacc. III:58 as *Phyllosticta cruenta* (Fr.) Kickx; 456:185). On leaves of *Polygonatum* sp., Harwan in Kashmir, and Kumaon (Butler).
- murrayae* Syd. (456:186; 384:188). On living leaves of *Murraya koenigii*, Dehra Dun (Butler). Von Hoehnel (Ann. Myc., XVIII:93, 1920) and Guba (Phytopath., XIV:234, 1924) also discuss this fungus.
- putranjivae* Syd. (384:201; 456:182 as *Phyllosticta putranjivae* Syd.). On leaves of *Putranjiva roxburghii*, Pusa (Butler).
- Plenozythia euphorbiae* Syd. (456:215). On bark of *Euphorbia tirucalli*, Pusa (Butler).
- Pleocyta sacchari* (Masse) Petrak & Syd. (384:455; Sacc. XIV:1019 as *Melanconium*; 93:14, fig., as *Trichosporia sacchari* Masse). On culms of *Saccharum officinarum*, Saharanpur, Bihar, and Madras. It has also been reported on *Zea mays* from the Philippines.
- Pleosphaeropsis capparidis* Diedicke (456:205; 384:105 as *Haplosporella capparidis* (Died.) Petrak & Syd.). On dead branches of *Capparis* sp., Pusa (Butler). Petrak and Sydow (384:103) regard the genus *Pleosphaeropsis*, which was founded by Diedicke for these three Indian species, as a subgenus of *Haplosporella* Speg. The three species are fully described by Petrak and Sydow.
- dalbergiae* Diedicke (456:203; 384:103 as *Haplosporella dalbergiae* (Died.) Petrak & Syd.). On dead branches of *Dalbergia sissoo*, Pusa (Butler).

- [*Pleosphaeropsis*] *gossypii* Diedicke (456:204 ; 384:104 as *Haplosporella gossypii* (Died.) Petrak & Syd.) On dead branches of *Gossypium* sp. cult., Pusa (Butler).
- Polystigmia rubra* (Desm.) Sacc. (Sacc. III:622 ; 456:217). On leaves of *Prunus domestica* var. *insititia* (given by error in 456 : 217 as *P. communis* var. *insititia*), Harwan, Kashmir (Butler); of *P. padus*, Murree (Butler).
- Pyrenochaete oryzae* Shirai (Sacc. XXII:934 ; 105:35 ; 456:189). On leaves and sheaths of *Oryza sativa*, Hmawbi, Burma (Butler).
- Rhynchodiplodia citri* Briosi & Farnetti (Sacc. XVII:330 ; 456:207). On *Citrus* fruits, Poona.
- Robillarda scutata* Syd. (467:153). On dead leaves of *Mimusops hexandra* Anand, Bombay (Blatter).
- *sessilis* Sacc. (Sacc. III:408 ; 456:195). On leaves of *Dalbergia* sp., Darjeeling (McRae).
- Saccidium depazeoides* Cke (172:7 ; Sacc. X:422). On leaves of *Aspidopterys "caudata"* [*A. ? cordata*], India.
- Sclerophoma piceae* (Fiedler) v. Hochn. (264, No. 402 ; Sacc. III:101 as *Phoma* ; 456:191). On branches of *Cedrus libani* var. *deodara*, Kulu (Parnell).
- Septogloeum acaciae* Syd. (445:489 ; 456:220). On leaves of *Acacia arabica*, Coimbatore (McRae) ; Kalpi, Jhansi District (Carr).
- *poincianae* Syd. (445:490). On leaves of *Poinciana alata*, Coimbatore and Koilpatti (McRae).
- Septoria aciculosa* Ell. & Everh. (Sacc. III:511 ; 456:213). On leaves of *Fragaria* sp., Harwan, Kashmir, and of *F. indica*, Shillong (Butler).
- *aitchisoni* Syd. (443, I:171 ; Sacc. XVIII:386). On leaves of *Jasminum humile*, Kurram Valley, Afghanistan frontier (Aitcheson).
- *alliacea* Cke (144:94 ; Sacc. III:572). On leaves of some Alliaceous plant, Belgaum (Hobson).
- *arcuata* Cke (144:94 ; Sacc. III:499 ; 456:213). On leaves of *Ficus* sp., Belgaum (Hobson) ; Wynaad (McRae) ; of *F. indica*, Dehra Dun (Butler) ; of *F. benjamina*, Poona (Butler) ; of *F. bengalensis*, Kanara (Kulkarni).
- *artocarpi* Cke (132:114 ; 134:5, fig. ; Sacc. III:500). On leaves of *Artocarpus integrifolia*, Mysore. The description suggests *Phyllostictina artocarpina*.
- *bakeri* Syd. (456:214). On leaves of *Leucas* sp., Pusa (Kar).
- *brachyspora* Sacc. (Sacc. III:500 ; 456:213). On leaves of *Ficus* sp., Khed, Bombay (Chibber).
- *brassicae* Ell. & Everh. (Sacc. XIV:968 ; 456:211). On leaves of *Brassica campestris* var. *rapa*, Sopor and Achibal, Kashmir (Butler).
- *butleri* Diedicke (456:212). On leaves of *Viburnum* sp., Harwan and Verinag, Kashmir (Butler).
- *cannabis* (Lasch) Sacc. (Sacc. III:557 ; 456:213). On leaves of *Cannabis sativa*, Pusa (Butler).

- Septoria*] *cattanei* Thuem. (488:37; Sacc. III:477). On leaves of *Citrus medica*, Kanara (Keck).
- chrysanthemella* Sacc. (Sacc. XI:542; 456:211). On leaves of *Chrysanthemum indicum*, Pusa and Begumserai, Bihar, and Dehra Dun (Butler).
- conyzae* Diedicke (456:210). On leaves of *Conyza* sp., Pusa (Butler).
- cordiae* Syd. (456:211). On leaves of *Cordia rothii*, Ganeshkhind, Poona (Chibber).
- diversimaculans* Diedicke (456:210). On leaves of *Cnicus argyranthus*, Shadipore, Kashmir (Butler).
- dolichi* Berk. & Curt. (Sacc. III:509; 456:212). On leaves of *Dolichos lablab*, Wynaad (McRae).
- hyalina* Ell. & Everh. (Sacc. XI:538; 456:213). On leaves of *Viola patrinii*, Mussoorie (Butler).
- lactucae* Peck (Sacc. III:552; 459:210). On leaves of *Lactuca* sp., Harwan, Kashmir (Butler). Saccardo considers *S. lactucae* Pass. to be apparently the same.
- lupulina* Ell. & Kellerm. (Sacc. X:380; 456:213). On leaves of *Humulus lupulus*, Dubgaon, Kashmir (Butler).
- macropora* Sacc. (Sacc. III:526; 456:211). On leaves of *Paconia emodii*, Kumaon (Butler).
- myriactidis* Syd. (456:210). On leaves of *Myriactis nepalensis*, Achibal, Kashmir (Butler). Sometimes accompanied by a *Phyllosticta*.
- pipula* Cke (143:95; Sacc. III:499). On leaves of *Ficus religiosa*, Belgaum (Hobson). Cooke spelled the specific name "*Pipula*" from the vernacular name of the host, but it is given in Saccardo as "*Pipulae*."
- plantaginea* Passerini (Sacc. III:554; 456:211). On leaves of *Plantago* sp. (near *P. lanceolata*), Harwan, Kashmir (Inayat). Often accompanied by a *Phyllosticta*.
- polygonicola* (Lasch) Sacc. (Sacc. X:380; 456:213). On leaves of *Polygonum* sp., Harwan, Kashmir (Butler).
- rosae* Desmaz. (Sacc. III:485; 456:213). On leaves of *Rosa* sp., Darjeeling (Hafiz Khan).
- rosarum* West. (Sacc. III:486; 456:213). On leaves of *Rosa* sp., Kangra, Punjab (Mitter); near Srinagar, Kashmir (Butler).
- rubi* West. (Sacc. III:486; 456:213). On leaves of *Rubus idaeus*, Shillong (Butler); of *R. lasiocarpus*, Harwan, Kashmir (Butler).
- scrophulariae* Peck (Sacc. III:534; 456:212). On leaves of *Scrophularia* sp., Harwan and near Srinagar, Kashmir (Butler).
- sojae* Syd. & Butler (456:212). On living or fading leaves of *Glycine soja*, Verinag, Kashmir (Inayat); Achibal, Kashmir (Butler).

- [*Septoria*] *sordidula* (Lév.) Sacc. (Sacc. III:548; 286:277 as *Ascospora sordidula* Lév.). On leaves of *Saussurea* (*Aplotaxis*) sp., India (Jacquemont). The type at Paris consists of four leaves, each with several spots darkened by pycnidia.
- stipina* Diedicke (456:214). On leaves of *Stipa* sp., Harwan, Kashmir (Butler).
- tabacina* Diedicke (456:210). On leaves of *Artemisia* sp., Darjeeling (McRae).
- tritici* Desmaz. (Sacc. III:561; 456:214; 111:175, figs.). On leaves of *Triticum vulgare*, Lyallpur (Mittra). *S. gramineum* Desmaz. (mentioned in 111:175) is found by Weber (Phytopath., XII:337-385) to be different.
- variegata* Vize (133:14; Sacc. III:507). On large coriaceous leaves, India (? Hobson).
- verbenae* Rob. & Desmaz. (Sacc. III:537; 456:212). On leaves of *Verbena officinalis*, Achibal, Kashmir (Butler).
- viburni* West. (Sacc. III:493; 456:212). On leaves of *Viburnum* sp., Harwan, Kashmir (Butler).
- vicoae* Diedicke (456:211). On leaves of *Vicoa vestita*, Pusa (Butler).
- villarsiae* Desmaz. (Sacc. III:541; 456:214). On leaves of *Limnanthemum* sp., Kashmir (Butler); of *L. nymphoides*, Woolar Lake, Kashmir (Butler).
- violae* West. (Sacc. III:518; 456:213). On leaves of *Viola* sp., Kumaon (Butler).
- Sirococcus butleri* Syd. (456:191). On dead branches of *Jasminum* sp., Pusa (Butler).
- calophylli* Syd. (456:190). On living or fading leaves of *Calophyllum inophyllum*, Kistna, Madras (Subramaniam).
- Sirothyrium taxi* Syd. (456:218). On living leaves of *Taxus baccata*, Murree (Butler).
- Sphaeronema bengalensis* Diedicke (456:190). On wood of *Ficus bengalensis*, Pusa (Chibber).
- Sphaeropsis absus* Cke (144:93; Sacc. III:292). On twigs of *Cassia absus*, Madras (? Hobson). Petrak and Sydow (384:16) change the generic name *Sphaeropsis* Sacc. to *Haplosporella* Speg., since Léveillé's earlier genus *Sphaeropsis* is an ascigerous fungus.
- ? *malorum* Berk. (Sacc. III:294; 348, figs.; 384:148 as *Botryodiplodia*). Isolated from fruit of *Pyrus malus*, Allahabad (Mitter and Tandon).
- palmarum* Cke (Sacc. III:157 as *Phoma*; 456:194; 384:164 as *Botryodiplodia*.) On petioles of *Cocos nucifera*, Poona (Chibber).
- Stagonospora arecae* Diedicke (456:207). On leaves of *Areca catechu*, Chittagong (Sen).
- cedri* Syd. & Butler (456:207). On dead branches of *Cedrus libani* var. *deodara*, Kulu (Butler). Associated with *Cytospora cedri*.
- Staurostoma sacchari* Syd. & Butler (456:217). On rotting culms of *Saccharum officinarum*, Dehra Dun (Butler.)

- Thyrostroma mori** (Nomura) v. Hoehn. (264, No. 718 ; Sacc. XXII:1230 as *Steganosporium mori* (Nom.) Sacc. & Trott.; 98:1, figs., as *Coryneum mori* Nom.). On branches of *Morus alba* and *Celtis australis* (*C. caucasica*), Kashmir (Butler).
- Urohendersonia indica** Syd. (456:209). On living leaves of *Erythrina* sp., Darjeeling (McRae).



LIST OF SYNONYMS AND OTHER NAMES FOUND TO HAVE BEEN  
APPLIED TO INDIAN FUNGI.

(Variant spellings not included here.)

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## HOST INDEX.

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     *Fomes annosus*  
*Abies smithiana*: see *Picea morinda*  
*Abrus pulchellus*—  
     *Ravenelia sessilis*  
*Acacia arabica*—  
     *Fomes badius*  
     *Septogloeum acaciae*  
*Acacia catechu*—  
     *Erysiphe acaciae*  
*Acacia eburnea*—  
     *Aecidium esculentum*  
*Acacia leucopitloea*—  
     *Catacauma acaciae*  
     *Haplophragmium ponderosum*  
*Acacia melanoxylon*—  
     *Ganoderma lucidum*  
*Acacia penninervis*—  
     *Phyllachora indica*  
*Acacia* sp.—  
     *Cladosporium herbarum*  
     *Fomes rimosus*  
*Acer caesium*—  
     *Rhytisma acerinum*  
*Acer oblongum*—  
     *Schizothyrium annuliforme*  
*Achlya polyandra*—  
     *Olpidiopsis minor*  
*Achyranthes aspera*—  
     *Cystopus bliti*  
*Aconitum lycoctonum*—  
     *Puccinia lycoctoni*  
*Acorus calamus*—  
     *Cryptosporium calami*  
     *Ureda acori*  
*Adhatoda vasica*—  
     *Aecidium adhatodae*  
     *Chnooopsis butleri*  
*Aechmanthera tomentosa*—  
     *Aecidium aechmantherae*  
*Aegle marmelos*—  
     *Asterina delicatula*  
*Agave americana*—  
     *Microdiplodia agaves*  
*Agave rigida* var. *sisalana*—  
     *Colletotrichum agaves*  
     *Leptosphaeria agaves*  
*Agave vera-crucis*—  
     *Capnodium ananac*  
*Agave* sp.—  
     *Botryosphaeria agaves*  
     *Coniothyria agaves*  
     *Cucurbitaria agaves*  
     *Microdiplodia agaves*  
*Agrimonia eupatorium*—  
     *Pucciniastrum agrimoniae*  
     *Sphaerotheca humuli*  
*Agrimonia pilosa*—  
     *Pucciniastrum agrimoniae*  
*Agropyron* sp.—  
     *Puccinia coronata*  
     *Uromyces agropyri*  
*Agrostis hookeriana*—  
     *Puccinia ? himalensis*  
*Ajuga* sp.—  
     *Aecidium ajugae*  
*Alangium lamarckii*—  
     *Asterina balii*  
     *Chaetosphaeria indica*  
*Albizia lebbek*—  
     *Ascochyta saccardiana*  
     *Ravenelia sessilis*  
     *Sphaerophragmium acaciae*  
*Albizia ? procera*—  
     see *Ravenelia indica*  
*Albizia* sp.—  
     *Physalospora rhodina*  
*Aleyrodes* sp. (insect)—  
     *Hypocrella discoidea*  
     *H. mollii*  
     *H. raciborskii*  
*Alisma plantago*—  
     *Doassansia alismatis*  
*Allium cepa*—  
     *Alternaria palandui*  
     *Puccinia ? porri*  
*Alnus nepalensis*—  
     *Polystictus velutinus* (wood)  
*Aloe spicata*—  
     *Uromyces aloes*  
*Aloe vera*—  
     *Uromyces aloes*  
*Alternanthera sessilis*—  
     *Cystopus bliti*  
*Alternanthera triandra*—  
     *Cystopus bliti*  
*Alysicarpus vaginalis* var. *nummularifolia*—  
     *Acanthostigma heterochaete*  
*Alysicarpus* sp.—  
     *Macrophomina phaseoli*  
*Amaranthus hitum*—  
     *Cystopus bliti*  
*Amaranthus gangeticus*—  
     *Pythium aphanidermatum*  
*Amaranthus paniculatus*—  
     *Cystopus bliti*  
*Amaranthus tristis*—  
     *Cystopus bliti*  
     *Sclerotinia sclerotiorum*

HOST INDEX—*contd.*

- Amaranthus viridis*—  
   Cystopus bliti  
*Amaryllis* sp.—  
   Aecidium amaryllidis  
*Amorphophallus campanulatus*—  
   Sclerotium rolfsii  
*Amphicarpaea edgeworthii*—  
   Woroninella aecidioides  
*Anamirta cocculus*—  
   Phyllosticta cocculi  
*Ananas sativus*—  
   Asterinella stuhlmanni  
*Anaphalis* sp.—  
   Puccinia investita  
*Andrachne cordifolia*—  
   Monosporidium andrachnis  
*Andropogon aciculatus*—  
   Balansia andropogonis  
*Andropogon annulatus*—  
   Entyloma obesum  
   Uromyces andropogonis-annulati  
   Ustilago andropogonis-annulati  
*Andropogon assimilis*—  
   Phyllachora assimilis  
   Puccinia pusilla  
*Andropogon bladhii*—  
   Ustilago duthiae  
*Andropogon caricosus* var. *mollicomus*—  
   Sphacelia sp.  
*Andropogon contortus*—  
   Balansia sclerotica  
   Cerebella andropogonis-contorti  
   Endodothella dispar  
   Puccinia versicolor  
   Sorosporium contortum  
   Ustilago warneckeana  
*Andropogon echinulatus*—  
   Puccinia hookeri  
*Andropogon foveolatus*—  
   Ustilago superflua  
*Andropogon halepensis*—  
   Puccinia purpurea  
   Sclerospora graminicola var.  
     andropogonis-sorghii  
   Sorosporium reilianum  
   Sphacelotheca eruenta  
   S. sorghi  
*Andropogon intermedius*—  
   Puccinia duthiae  
*Andropogon luniger*—  
   Puccinia nakanishikii  
*Andropogon martini*—  
   Sorosporium wildemanianum  
*Andropogon micranthus*—  
   Phyllachora assimilis  
   Puccinia kozukensis  
*Andropogon muricatus*—  
   Phyllachora cyperi var. *donacis*  
   Ustilago effusa  
*Andropogon nardus*—  
   Balansia sclerotica  
   Cerebella nardi  
   Puccinia nakanishikii  
   Ustilago nardi  
*Andropogon pertusus*—  
   Puccinia duthiae  
   Ustilago tennis  
*Andropogon schoenanthus*—  
   Balansia sclerotica  
   Uromyces schoenanthi  
   Ustilago schoenanthi  
*Andropogon serratus*—  
   Phyllachora graminis  
   Puccinia prunicolor  
*Andropogon sorghum*—  
   Acrothecium lunatum  
   Cerebella sorghi-vulgaris  
   Colletotrichum graminicolum  
   Helminthosporium turcicum  
   Phyllachora sorghi  
   Phyllosticta sorghina  
   Puccinia purpurea  
   Sclerospora graminicola, var. *andropogo-*  
     *nis-sorghii*  
   Sorosporium reilianum  
   Sphacelia sorghi  
   Sphacelotheca eruenta  
   S. sorghi  
   Tolyposporium ehrenbergii  
*Andropogon tristis*—  
   Puccinia ? andropogonis  
*Andropogon trilicicus*—  
   Phyllachora graminis  
*Andropogon tuberculatus*—  
   Ustilago andropogonis-tuberculati  
*Andropogon* sp.—  
   Puccinia propinqua  
   Sorosporium geminellum  
   Ustilago amadelpsa  
*Aneilema nudiflorum*—  
   Ustilago burkii  
*Anemone ricularis*—  
   Aecidium ? leucoaspermum  
   Puccinia fusca  
*Angelica glauca*—  
   Puccinia ? ellisii  
*Anisomides ovalis*—  
   Synchytrium rytzi  
*Anthistria anathera*—  
   Puccinia anthistriae  
*Anthistria arundinacea*—  
   Ustilago bursa  
*Anthistria imberbis*—  
   Puccinia burnianica

HOST INDEX—*contd.*

- anthistiria* sp.—  
*Phyllachora graminis*  
*anthriscus nemorosa*—  
*Puccinia chaetophylli*  
*antirrhinum majus*—  
*Phytophthora pini* var. *antirrhini*  
*phanomyces laevis*—  
*Pseudolpidium aphanomyces*  
*phis* sp. (insect)—  
*Entomophthora aphidis*  
*pium graveolens*—  
*Cercospora apii*  
*Puccinia apii*  
*pluda aristata*—  
*Balansia sclerotica*  
*Uredo apludae*  
*Uromyces apludae*  
*U. inayati*  
*pluda mutica*—  
*Hendersonia minutissima*  
*Puccinia apludae*  
*pluda varia*—  
*Uromyces inayati*  
*quilegia vulgaris*—  
*Puccinia agrostidis*  
*rachis hypogaea*—  
*Cercospora personata*  
*Corticium solani*  
*Diplodia arachidis*  
*Macrophomina phaseoli*  
*Sclerotium rolfsii*  
*rabia pseudo-ginseng*—  
*Uredo panacis*  
*reca catechu*—  
*Ceratostomella paradoxa*  
*Colletotrichum catechu*  
*Diplodia catechu*  
*Ganoderma lucidum*  
*Phomaopsis heteronema*  
*Phyllostictina arecae*  
*Phytophthora arecae*  
*P. palmivora*  
*Rosellinia coccos*  
*Stagonospora arecae*  
*rgemone mexicana*—  
*Peronospora arborescens*  
*Sclerotinia sclerotiorum*  
*rgyreia argentea*—  
*Aecidium argyreia*  
*rgyreia cymosa*—  
*Aecidium argyreia*  
*rgyreia hirsuta*—  
*Meliola clavulata*  
*rgyreia speciosa*—  
*Aecidium argyreia*  
*risaema* sp.—  
*Uromyces arisaema*  
*Aristida cyanantha*—  
*Ustilago aristidae-cyananthae*  
*Aristida depressa*—  
*Puccinia aristidicola*  
*Artabotrys odoratissimus*—  
*Phomopsis artabotrydis*  
*Artemisia vulgaris*—  
*Puccinia artemisiella*  
*Artemisia* sp.—  
*Puccinia absinthii*  
*P. ferruginosa*  
*Septoria tabacina*  
*Arthraxon lanceolatus*—  
*Puccinia arthraxonis*  
*Artocarpus integrifolia*—  
*Phyllostictina artocarpina*  
*Phytophthora arecae*  
*Rhizopus artocarpi*  
*Septoria artocarpi*  
*Trametes cincta* (wood)  
*"Artocarpus mysorensis"*  
*Phaeosaccardinula butleri*  
*Artocarpus* sp.—  
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*Arundinaria spathiflora*—  
*Rosellinia spadicea*  
*Arundinaria* sp.—  
*Phyllachora shiraiana*  
*Puccinia melanocephala*  
*Arundinella brasiliensis*—  
*Puccinia arundinellae*  
*Arundinella setosa*—  
*Puccinia arundinellae*  
*Ustilago arundinellae*  
*Arundinella wallichii*—  
*Puccinia arundinellae*  
*Ustilago effusa*  
*Arundo donax*—  
*Coniosporium donacis*  
*Arundo* sp.—  
*Phyllachora cyperi* var. *donacis*  
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*Cercospora asparagi*  
*Asparagus racemosus*—  
*Aspergillus phaeocephalus* (roots)  
*Asparagus* sp.—  
*Leptosphaeria indica*  
*Asphodelus fistulosus*—  
*Puccinia barbeyi*  
*Aspidiotus* sp. (insect)—  
*Nectria diploa*  
*Aspidium aristatum*—  
*Taphrina cornu-cervi*  
*Urobasidium rostratum* (galls)  
*Aspidopterys F cordata*—  
*Saccidium depazeoides*

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Puccinia caricis-asteris
- Asterina camelliae*—  
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- Astilbe japonica*—  
Pucciniostele clarkiana
- Astilbe rivularis*—  
Pucciniostele clarkiana
- Astragalus* sp.—  
Pleospora spinarum
- Avena sativa*—  
Helminthosporium avenae  
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Ustilago avenae
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Daedalea flavida  
Fomes hypoplastus  
Irpex flavus var. orbicularis  
Merulius similis (roots)  
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P. bambusicola (roots)  
Polystictus fibula (roots)  
Poria diversispora  
Stilbum erythrocephalum  
S. lateritium  
Thelephora palmata (stems)  
Xylaria timorensis
- Bambusa spinosa*—  
Endodothella bambusae  
Helminthosporium bambusae
- Bambusa* sp.—  
Amphisphaeria khandalensis  
Anthostomella bambusae  
Apiospora indica  
Asterocystis mirabilis  
Balladyna butleri  
Clypeosphaeria ? crenulatum  
Cytospora bambusina (stem)  
Diatrype chlorosarea (stem)  
Diplodia bambusina (stem)  
Diplozythella bambusina  
Epichloe bambusae  
Eriosphaeria calospora  
Hypocrella semiamplexa  
Hypoxyton fusco-purpureum (stem)  
H. perforatum  
H. rubiginosum (stem)  
Konradia bambusina  
Nectria vilis (? on insect)  
Phyllachora bambusae  
P. malabarensis  
Puccinia gracilentia  
P. xanthosperma  
Scirrhodothis seriata  
Sphaerella bambusina  
Ustilago shirataiana
- Barringtonia acutangula*—  
Favolus tessellatus (? wood)  
Meliola indica
- Bassia latifolia*—  
Uromyces echinulatus
- Bauhinia acuminata*—  
Uromyces vestergreni
- Bauhinia tomentosa*—  
Uromyces vestergreni
- Bauhinia wuhlii*—  
Lasmeniella globulifera  
Phyllachora bauhiniae  
Pseudotheca bauhiniae
- Belamcanda punctata*—  
Phoma pardanthi  
Puccinia belamcandae
- Berberis aristata*—  
Aecidium montanum  
Puccinia droogensis  
P. graminis
- Berberis coriaria*—  
Aecidium montanum
- Berberis lycium*—  
Aecidium montanum  
Puccinia graminis
- Berberis nepalensis*—  
Gambleola cornuta
- Berberis umbellata*—  
Puccinia graminis
- Berberis vulgaris*—  
Puccinia graminis
- Berberis* sp.—  
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- Beta bengalensis*—  
Sclerotinia sclerotiorum
- Beta vulgaris*—  
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- Betula* sp.—  
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Valsa nepalensis
- Bidens pilosa*—  
Sphaerotheca humuli var. fuliginea  
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- Biophytum* sp.—  
Cercospora biophyti
- Bischofia javanica*—  
Phyllachora bischofiaae
- Blainvillea rhomboidea*—  
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*Diplodia rheea*  
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*Cystopus platensis*  
*Boletus* sp.—  
*Hypomyces chrysospermus*  
*Cladobotryum malabaricum*—  
*Cladotrichum foliicola*  
*Crassus flabellifer*—  
*Ceratostomella paradoxa*  
*Graphiola borassi*  
*Phytophthora palmivora*  
*Osea antherostiana*—  
*Cystopus ? bliti*  
*Oussingaultia baselloides*—  
*Macrophoma boussingaultiae*  
*Rachypodium sylvaticum*—  
*Puccinia glumarum*  
*P. graminis*  
*P. himalensis*  
*Rassica campestris*—  
*Cystopus candidus*  
*Erysiphe polygoni*  
*Peronospora parasitica*  
*Rassica campestris* var. *glauca*—  
*Sclerotinia sclerotiorum*  
*Rassica campestris* var. *rapa*—  
*Septoria brassicae*  
*Rassica campestris* var. *sarson*—  
*Alternaria brassicae*  
*Peronospora parasitica*  
*Sclerotinia sclerotiorum*  
*Urocystis coralloides*  
*Rassica campestris* var. *toria*—  
*Cystopus candidus*  
*Peronospora parasitica*  
*Rassica juncea*—  
*Peronospora parasitica*  
*Rassica oleracea*—  
*Alternaria circinans*  
*Plasmodiophora brassicae*  
*Rassica napus*—  
*Peronospora parasitica*  
*Rassica nigra*—  
*Cystopus candidus*  
*Breynia rhamnoides*—  
*Aecidium breyniae*  
*Ravenelia breyniae*  
*Bridelia scandens*—  
*Pestalotzia mangalorica*  
*Bridelia tomentosa* var. *chinensis*—  
*Sphaeria cinerea*  
*Bryophyllum calycinum*—  
*Phytophthora arecae*  
*Buddleia* sp.—  
*Phyllosticta buddleiae*  
*Bupleurum falcatum*—  
*Puccinia bupleuri-falcanti*  
*Bupleurum lanceolatum*—  
*Puccinia bupleuri-falcati*  
*Butea frondosa*—  
*Cladosporium buteacolum*  
*Phyllosticta buteae*  
*Bursera sempervirens*—  
*Uromyces ambiens*  
*Bursera sempervirens* var. *himalayensis*—  
*Laetia buxifolia*  
*Caesalpinia pulcherrima*—  
*Polyporus calcutensis* (wood)  
*Cajanus indicus*—  
*Allescherina cajani* (bark)  
*Botryosphaeria xanthocephala*  
*Fusarium uncinatum*  
*F. vasinfectum*  
*Macrophoma phaseoli*  
*Nectria bolbophylli*  
*Neocosmospora vasinfecta*  
*Ophiobolus cajani* (stem)  
*Phomopsis cajani*  
*Phyllosticta cajani*  
*Uredo cajani*  
*Winteria profusa* (twigs)  
*Caladium* sp.—  
*Cercospora caladii*  
*Calamintha clinopodium*—  
*Puccinia menthae*  
*Calamintha umbrosa*—  
*Puccinia menthae*  
*Calamintha* sp.—  
*Sclerotinia sclerotiorum*  
*Calamus fasciculatus*—  
*Pleogibberella calamia*  
*Calamus tenuis*—  
*Physalospora calami*  
*Calamus* sp.—  
*Diplodia calami*  
*Palawanella grandis*  
*Calceolaria scabiosaefolia*—  
*Peronospora indica*  
*Calendula officinalis*—  
*Alternaria dianthi*  
*Calophyllum inophyllum*—  
*Macrophoma calophylli*  
*Sirococcus calophylli*  
*Calotropis gigantea*—  
*Cercospora calotropidis*  
*Phoma keckii*  
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*Camellia thea* : see *Thea sinensis*—  
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     *Coleosporium campanulae*  
*Campanula canescens*—  
     *Coleosporium campanulae*  
*Campanula colorata*—  
     *Coleosporium campanulae*  
*Campanula sylvatica*—  
     *Coleosporium campanulae*  
*Canavalia ensiformis*—  
     *Colletotrichum capsici*  
*Cannabis sativa*—  
     *Cercospora cannabina*  
     *Sclerotinia sclerotiorum*  
     *Septoria cannabis*  
*Cansjera rheedii*—  
     *Asterina cansjeriae*  
*Canthium* : see *Plectronia*  
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     *Microthyrium annuliforme*  
*Capparis spinosa* var. *leucophylla*—  
     *Paranthostomella capparidis*  
*Capparis* sp.—  
     *Asterina celtidicola* var. *capparidis*  
     *Masseella capparidis*  
     *Oidiopsis taurica*  
     *Ophiobolus butleri* (stem)  
     *Phyllosticta capparidicola*  
     *Pleosphaeropsis capparidis*  
     *Tubercularia maculicola*  
*Capsella bursa-pastoris*—  
     *Cystopus candidus*  
     *Peronospora parasitica*  
*Capsicum annuum*—  
     *Cercospora capsici*  
     *Colletotrichum nigrum*  
     *Nectria botryophylla*  
     *Pythium aphanidermatum*  
*Capsicum* sp.—  
     *Choanephora cucurbitarum*  
     *Colletotrichum capsici*  
     *Gloeosporium piperatum*  
     *Glomerella cingulata*  
     *Oidiopsis taurica*  
*Caragana* sp.—  
     *Phyllachora erobia*  
*Carex baccans*—  
     *Ustilago endotricha*  
*Carex condensata*—  
     *Ustilago olivacea*  
*Carex filicina*—  
     *Puccinia caricis-filicinae*  
*Carex setigera*—  
     *Puccinia caricis*  
*Carex* sp.—  
     *Balanisia thanatophora*

*Careya arborea*—  
     *Meliola indica* var. *careyae*  
*Carica papaya*—  
     *Diplodia papayae*  
     *Macrophomina phaseoli*  
     *Phytophthora palmivora*  
     *Pythium aphanidermatum*  
*Carthamus oxyacantha*—  
     *Puccinia carthami*  
*Carthamus tinctorius*—  
     *Cercospora carthami*  
     *Puccinia carthami*  
     *Sclerotinia sclerotiorum*  
*Caryota urens*—  
     *Macrophoma caryotae*  
*Caryota* sp.—  
     *Phyllosticta ? cocos*  
*Cassia absus*—  
     *Macrophoma cassicarpa*  
     *Ravenelia indica*  
     *Sphaeropsis absus*  
*Cassia occidentalis*—  
     *Cercospora occidentalis*  
*Cassia sophora*—  
     *Uredo socotrae*  
*Cassia tora*—  
     *Aecidium cassiae*  
*Castanopsis javanica*—  
     *Pucciniastrum castaneae*  
*Castanopsis* sp.—  
     *Prillieuxina winteriana*  
*Casuarina equisetifolia*—  
     *Trichosporium vesiculosum*  
*Casuarina muricata*—  
     *Trichosporium vesiculosum*  
*Casuarina* sp.—  
     *Ganoderma lucidum* (roots)  
     *Phoma casuarinae*  
     *Stereum nitidulum* (wood)  
     *Xylaria hypoxylon* (wood)  
*Catascopus* sp. (insect)—  
     *Laboulbenia assumensis*  
     *L. tenuis*  
*"Causcora decussata"*—  
     *Phoma causcorae*  
*Cedrela toona*—  
     *Polyporus zonalis* (wood)  
     *Xylaria heloidea*  
*Cedrus libani* var. *deodara*—  
     *Cytospora cedri*  
     *Fomes annosus*  
     *Peridermium cedri*  
     *Sclerophoma piceae*  
     *Stagonospora cedri*  
     *Trametes pini*  
*Celastrus paniculatus*—  
     *Pucciniastrum celastris*

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*astrus* sp.—  
   Hypoxylon ? hypomiltum  
   Macrophoma celastrina  
   Metasphaeria celastrina (bark)  
   Parasterina pemphidioides  
  
*sia coromandelina*—  
   Peronospora celsiae  
  
*lis australis*—  
   Thyrostroma mori  
   Uncinula polychaeta  
  
*ichrus biflorus*—  
   Cerebella cenchroidis  
  
*staurca calitrapa*—  
   Puccinia centaureae  
  
*dotheca lappacea*—  
   Phyllachora centothecae  
  
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   Melanospora parasitica  
  
*halostigma schimperii*—  
   Coleosporium campanulac  
  
*opegia ? hirsuta*—  
   Phyllachora ajrekari  
  
*nopodium album*—  
   Peronospora effusa  
   Phyllosticta ambrosioides  
   Sclerotinia sclerotiorum  
  
*nopodium ambrosioides*—  
   Cercospora anthelmintica  
  
*nopodium botrys*—  
   Erysiphe polygoni  
  
*ionachne barbata*—  
   Phyllachora chionachnes  
  
*onaspis manni* (insect)—  
   Podoneetria coccicola  
  
*onaspis* sp. (insect)—  
   Sphaerostilbe coccidiphthora  
  
*oris barbata*—  
   Phyllachora graminis  
  
*ysanthemum indicum*—  
   Puccinia chrysanthemi  
   Septoria chrysanthemella  
  
*ysanthemum* sp.—  
   Phyllosticta chrysanthemi  
  
*ysopogon gryllus*—  
   Puccinia chrysopogi  
  
*er arietinum*—  
   Ascochyta pisi  
   Neocosmospora vasinfecta  
   Sclerotinia sclerotiorum  
   Sclerotium rolfsii  
   Uromyces cicoris-arietini  
  
*terium intybus*—  
   Puccinia cichorii  
  
*chona ledyeriana*—  
   Corticium salmonicolor

*Cinchona* "regia"—  
   Myriangium cinchonae  
  
*Cinchona* sp.—  
   Botryodiplodia theobromae  
   Fomes lamaocensis (roots)  
  
*Cinnamomum tamala*—  
   Exobasidium cinnamomi  
  
*Cinnamomum* sp.—  
   Campotrichum cinnamomi  
   Meliola ? zigzag  
  
*Cipura paludosa*—  
   Puccinia cipurae  
  
*Circaea alpina*—  
   Puccinia circaeae  
  
*Cirsium arvense*—  
   Cystopus tragopogonis  
   Puccinia suaveolens  
   Sclerotinia sclerotiorum  
  
*Citrullus colocynthis*—  
   Puccinia citrulli  
  
*Citrullus vulgaris*—  
   Macrophomina phaseoli  
  
*Citrus aurantium*—  
   Colletotrichum gloeosporioides  
   Corticium salmonicolor  
   Daldinia concentrica (wood)  
   Diplodia indica (bark)  
   Massarina usambarensis  
   Oidium ? tingitaninum  
   Nectria heterosperma, var.  
  
*Citrus decumana*—  
   Meliola butleri  
  
*Citrus limonum*—  
   Phytophthora arecae  
  
*Citrus medica*—  
   Ascochyta citri  
   Colletotrichum gloeosporioides  
   Diplodia citrina (roots)  
   Melanomma citricola (bark)  
   Phytophthora arecae  
   Septoria cattanei  
  
*Citrus medica* var. *acidula*—  
   Meliola ? amphitricha  
   M. butleri  
  
*Citrus* sp.—  
   Cercospora penzigii  
   Cytospora citri  
   Meliola camelliae  
   Oospora citri-aurantii  
   Peroneutypella pusilla (wood)  
   Rhynchodiplodia citri  
   Tryblidiella rufula (bark)  
  
*Clarkia* sp.—  
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*Clematis buchaniana*—  
   Coleosporium clematidis  
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     *Puccinia wattiana*  
*Clematis gouriana*—  
     *Puccinia wattiana*  
*Clematis grata*—  
     *Accidium orbiculare*  
     *Coleosporium clematidis*  
*Clematis montana*—  
     *Coleosporium clematidis*  
*Clematis nutans*—  
     *Coleosporium clematidis*  
*Clematis orientalis*—  
     *Accidium orbiculare*  
*Clematis puberula*—  
     *Accidium orbiculare*  
     *Puccinia wattiana*  
*Clematis trilobata*—  
     *Coleosporium clematidis*  
*Cleome viscosa*—  
     *Cystopus candidus*  
*Cleome* sp.—  
     *Cercospora cleomis*  
*Clerodendron infortunatum*—  
     *Colletotrichum clerodendri*  
     *Meliola clerodendricola*  
     *Synchytrium collapsum*  
*Clerodendron* sp.—  
     *Accidium clerodendri*  
     *Cerotelium peregrina*  
     *Phyllosticta clerodendri*  
*Clitoria ternatea*—  
     *Cercospora pentaleuca*  
     *C. ternateae*  
*Clitoria* sp.—  
     *Leptothyrium leguminum*  
     *Macrophoma cassiocalpa*  
     *M. clitoricarpa*  
*Cnicus argyranthus*—  
     *Puccinia suaveolens*  
     *Septoria diversimaculans*  
*Coccinia indica*—  
     *Erysiphe cichoracearum*  
     *Puccinia cephalandras-indicae*  
*Cocculus villosus*—  
     *Cercospora cocculi*  
*Cocos nucifera*—  
     *Ceratostomella paradoxa*  
     *Nectria bolbophylli*  
     *Pestalozzia palmarum*  
     *Phyllosticta cocos*  
     *Physalospora transversalis*  
     *Phytophthora arecae*  
     *P. palmivora*  
     *Sphaeropsis palmarum*  
     *Trametes cingulata* (bark)  
*Codiaeum* sp.—  
     *Phyllosticta codinaicola*
- Coffea arabica*—  
     *Aecidium nobile*  
     *Capnodium brasiliense*  
     *Cercospora coffeicola*  
     *Hemileia vastatrix*  
     *Phyllosticta ? coffeicola*  
*Coffea liberica*—  
     *Coniothyrium coffeae*  
     *Hemileia vastatrix*  
*Coffea robusta*—  
     *Hemileia vastatrix*  
*Coffea* sp.—  
     *Corticium koleroga*  
     *C. salmonicolor*  
     *Fomes lamaocensis* (roots)  
     *Ganoderma australe* (roots)  
     *Glomerella cingulata*  
     *Sphaerella coffeicola*  
*Coix lachryma-jobi*—  
     *Phyllachora coicis*  
     *Uredo aperta*  
     *Ustilago coicis*  
*Colebrookia oppositifolia*—  
     *Uredo colebrookiana*  
*Colcopterothrips procerus* (acarus)—  
     *Rickia colcopterothripi*  
*Colocasia antiquorum*—  
     *Phytophthora arecae*  
     *P. colocasiae*  
*Colquhounia coccinea*—  
     *Puccinia leucophaea*  
*Commelina bengalensis*—  
     *Uromyces commelinae*  
*Commelina obliqua*—  
     *Uromyces commelinae*  
*Commelina* sp.—  
     *Kordyana indica*  
*Conyza* sp.—  
     *Bromia lactucae*  
     *Septoria conyzae*  
*Corchorus capsularis*—  
     *Diplodia corchori*  
     *Macrophomina phaseoli*  
*Corchorus olitorius*—  
     *Diplodia corchori*  
     *Macrophomina phaseoli*  
*Corchorus* sp.—  
     *Valsa corchori*  
*Cordia macleodii*—  
     *Uncinula tectonae*  
*Cordia rothii*—  
     *Accidium brasiliense*  
     *Septoria cordiae*  
*Coriandrum sativum*—  
     *Erysiphe polygoni*  
     *Protomyces macrosporus*

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- Isariaria nepalensis*—  
     Pucciniastrum coriariae  
*Isaria macrophylla*—  
     Fusarium pannosum  
*Isaria columna*—  
     Microsphaera alni  
*Isomaster bacillaris*—  
     Aecidium cunninghamianum  
*Isotria cyperoides*—  
     Uredo courtoisiae  
*Isotria coccinea*—  
     Aecidium patulum  
*Isotria sp.*—  
     Cylindrosporium oxyacanthae  
*Isotria religiosa*—  
     Aecidium crataevae  
*Isotria glauca*—  
     Cystopus tragopogonis  
*Isotria cretica*—  
     Puccinia cressae  
*Isotria asiaticum*—  
     Aecidium amaryllidis  
*Isotria filipes*—  
     Parodiella paraguayensis  
*Isotria juncea*—  
     Macrophomina phaseoli  
     Neocosmospora vasinfecta  
     Uromyces decoratus  
*Isotria leschenaultii*—  
     Parodiella spegazzinii  
*Isotria buchananii*—  
     Aecidium ponderosum  
*Isotria melo*—  
     Pseudoperonospora cubensis  
*Isotria sativus*—  
     Pythium aphanidermatum  
*Isotria maxima*—  
     Macrophomina phaseoli  
*Isotria moschata*—  
     Sphaerotheca humuli var. fuliginosa  
*Isotria javanensis*—  
     Hymenopsis eudraeae  
*Isotria sinensis*—  
     Pestalozzia funerea  
*Isotria orchoides*—  
     Puccinia curculionis  
*Isotria amala*—  
     Taphrina maculans  
*Isotria angustifolia*—  
     Taphrina maculans  
*Isotria longa*—  
     Colletotrichum curcuma  
     Taphrina maculans  
*Cyamopsis psoraloides*—  
     Neocosmospora vasinfecta  
     Oidiopsis taurica  
*Cyanotis tuberosa*—  
     Uromyces commelinae  
*Cyathula capitata*—  
     Uredo gomphrenae  
*Cycas revoluta*—  
     Phyllosticta cycadina  
*Cydonia vulgaris*—  
     Entomosporium maculatum  
*Cymbidium ? aloifolium*—  
     Botryosphaeria egenula  
*Cymbopogon martini* var. *safia*—  
     Ephelis sp.  
*Cymbopogon pendulus*—  
     Ustilago bengalensis  
*Cymbopogon* : see also *Andropogon*  
*Cynodon dactylon*—  
     Cerebella cynodontis  
     Dimerosporium erysiphoides  
     Phyllachora cynodontis  
     Puccinia cynodontis  
     Ustilago cynodontis  
*Cyperus arenarius*—  
     Puccinia romagnoliana  
*Cyperus capitatus*—  
     Puccinia romagnoliana  
     Uredo ? cypericola  
*Cyperus compressus*—  
     Puccinia romagnoliana  
*Cyperus rotundus*—  
     Puccinia romagnoliana  
     Uredo ? cypericola  
*Cyperus tegetum*—  
     Puccinia romagnoliana  
*Cyperus tuberosus*—  
     Puccinia romagnoliana  
     Uredo ? cypericola  
*Cyperus sp.*—  
     Cintractia peribebuyensis  
*Dactylis glomerata*—  
     Puccinia dactylidina  
*Dahlia variabilis*—  
     Micropera dahliae  
*Dalbergia lanceolata*—  
     Phyllachora dalbergiae  
*Dalbergia sissoo*—  
     Camarosporium staurophragmium  
     Daldinia concentrica (wood)  
     Diplodia dalbergiae  
     Fomes rimosus (wood)  
     Hypoxylon ? investiens (bark)  
     H. rubiginosum (bark)  
     Nummularia cinnabarina  
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- Dalbergia sissoo*—contd.  
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*P. spissa*  
*Phyllactinia corylea* var. *subspinalis*  
*Phyllosticta sissoo*  
*Plecosphaeropsis dalbergiae*  
*Polyporus gilvus*  
*Uredo sissoo*  
*Uromyces achrous*  
*Xylaria aspera* (wood)
- Dalbergia* sp.—  
*Robillardia scutata*
- Datisca cannabina*—  
*Coleosporium datisciae*
- Datura fastuosa*—  
*Colletotrichum capsici*
- Datura stramonium*—  
*Alternaria crassa*
- Deeringia celosioides*—  
*Puccinia celospermae*
- Deeringia*: see also *Bosca*
- Delphinium* sp.—  
*Sclerotium rolfsii*
- Dendrocalamus* sp.—  
*Corticium koleroga*
- Desmodium rufescens*—  
*Parodiella perisporioides*
- Desmodium triflorum*—  
*Parodiella perisporioides*
- Desmodium* sp.—  
*Meliola bicornis*  
*Phyllachora desmodii*  
*Phyllosticta desmodiicola*
- Desmoncus "melanochaetus"*—  
*Phoma desmonci*
- Deutzia corymbosa*—  
*Uredo deutziae*
- Deutzia staminea*—  
*Aecidium deutziae*
- Dianthus* sp.—  
*Sclerotium rolfsii*
- Dichrocephala latifolia*—  
*Aecidium dichrocephalae*
- Dicliptera* sp.—  
*Aecidium tweedii*  
*Synchytrium rytzii*
- Digera arvensis*—  
*Cystopus bliti*
- Dineutes* sp. (insect)—  
*Laboulbenia dineutis*
- Dioscorea sativa*—  
*Uredo dioscoreae-sativae*
- Dioscorea* sp.—  
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*Cercospora dioscoreae*  
*G. ubi*
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*Uredo dioscoreae*
- Diospyros embryopteris*—  
*Botryodiplodia diospyri*  
*Ceuthospora diospyri*  
*Diplodia embryopteridis*  
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- Diospyros montana*—  
*Meliola diospyri*
- Diospyros tomentosa*—  
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- Dolichos biflorus*—  
*Macrophomina phaseoli*  
*Neocosmospora vasinfecta*  
*Phyllosticta dolichi*
- Dolichos lablab*—  
*Cercospora dolichi*  
*Macrophomina phaseoli*  
*Neocosmospora vasinfecta*  
*Septoria dolichi*  
*Uromyces appendiculatus*
- Dolichos typica*—  
*Cercospora dolichi*
- Dracaena draco*—  
*Stylina disticha*
- Dracaena* sp.—  
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- Dumasia villosa*—  
*Acanthostigma heterochaete*
- Dunbaria ferruginea*—  
*Woroninella dolichi*
- Echinops cornigerus*—  
*Puccinia pulvinata*
- Echinops echinatus*—  
*Puccinia pulvinata*
- Echinops niveus*—  
*Puccinia pulvinata*
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*Schroeteria schretiae*  
*Uredo ehretiae*
- Elaeodendron glaucum*—  
*Asterinella intensa*
- Elettaria cardamomum*—  
*Placostroma elettariae*
- Eleusine coracana*—  
*Aerothecium lunatum*  
*Helminthosporium nodulosum*  
*Piricularia ? oryzae*  
*Sclerotium rolfsii*  
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     Ustilago egenula  
*Eragrostis rhachitricha*—  
     Ustilago spermophora  
*Eragrostis tenuifolia*—  
     Epiclloe cinerea  
*Eragrostis* sp.—  
     Ephelis ? japonica  
*Erianthus* sp.—  
     Cintractia pulverulenta  
*Erigeron alpinus*—  
     Puccinia dovrensis  
*Erigeron alpinus* var. *multicaulis*—  
     Puccinia ? dovrensis  
*Eriobotrya japonica*—  
     Diplodia ? eriobotryae  
     Leptosphaeria eriobotryae  
*Eriochloa polystachya*—  
     Uromyces eriochloae  
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     Hypoerella javanica  
*Eriodendron anfractuosum*—  
     Phyllosticta eriodendri  
*Eruca sativa*—  
     Cystopus candidus  
     Peronospora parasitica  
*Eryngium billardieri*—  
     Erysiphe polygoni  
*Erythraea roxburghii*—  
     Peronospora chlorae  
*Erythrina* sp.—  
     Uredo erythrinae  
     Urobendersonia indica  
*Eucalyptus globulus*—  
     Pestalozzia funerea  
*Euchlaena mexicana*—  
     Sclerospora graminicola var. *autropogonis-sorghii*  
*Eugenia eucalyptoides*—  
     Meliola eugenicola  
*Eugenia heyneana*—  
     Parasterina pemphidioides  
*Eugenia jambolana*—  
     Diplodia variispora  
     Meliola cladotricha  
     Phyllachora ambigua  
*Eugenia jumbos*—  
     Capnodium eugeniarum  
*Eugenia tetragona*—  
     Entyloma eugeniarum  
*Eugenia* sp.—  
     Nectria eugeniae  
*Euphorbia dracunculoides*—  
     Melampsora helioscopiae  
*Euphorbia helioscopia*—  
     Melampsora helioscopiae  
*Euphorbia hypericifolia* var. *indica*—  
     Uromyces ? proeminens  
*Euphorbia neriifolia*—  
     Cercospora euphorbiae  
*Euphorbia pilosa*—  
     Melampsora helioscopiae  
     Monosporidium euphorbiae  
     Sphaerotheca euphorbiae  
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     Melampsora helioscopiae  
*Euphorbia thyrsoidea*—  
     Melampsora helioscopiae  
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     Cercospora euphorbiae  
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     Cercospora euphorbiae  
     Melampsora euphorbiae-gerardiana  
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     Exobasidium euryae  
     Phyllachora transiens  
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     Laboulbenia euschizomeri  
*Excoecaria acerifolia*—  
     Daldinia concentrica (wood)  
*Excoecaria agallocha*—  
     Polystictus menziesii  
*Fagopyrum esculentum*—  
     Puccinia fagopyri  
     Sphaelotheca fagopyri  
*Feronia elephantum*—  
     Massarina usambarensis  
*Festuca gigantea*—  
     Puccinia graminis  
     P. himalensis  
*Festuca kashmiriana*—  
     Puccinia graminis  
*Ficus altissima*—  
     Diplodia calcicutiana  
*Ficus bengalensis*—  
     Capnodium anonae  
     Fomes pachyphlaeus (bark)  
     Polyporus luzonensis (wood)  
     Septoria arcuata  
     Sphaeronema bengalensis  
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     Capnodium anonae  
     Septoria arcuata  
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   *Capnodium anonae*  
   *Cerotelium fici*  
   *Diplodia sycina*  
   *Hypoxyton stygium* (bark)  
  
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   *Catacauma repens*  
  
*Ficus hispida*—  
   *Cercospora annulata*  
   *Phyllachora catervaria*  
  
*Ficus indica*—  
   *Septoria arcuata*  
  
*Ficus infectoria*—  
   *Catacauma infectorium*  
   *Marchalia ustulata*  
   *Trabutia ficium*  
  
*Ficus mysorensis*—  
   *Catacauma microcentrum* var. *graphica*  
*? Ficus mysorensis*—  
   *Phaeosaccardinula butleri*  
  
*Ficus nitida*—  
   *Phytophthora arecae*  
  
*Ficus palmata*—  
   *Cerotelium fici*  
  
*Ficus religiosa*—  
   *Catacauma infectorium*  
   *C. repens*  
   *Cerotelium fici*  
   *Macrophoma sycophila*  
   *Phyllosticta religiosa*  
   *Septoria pipula*  
  
*Ficus retusa*—  
   *Capnodium anonae*  
  
*Ficus roxburghii*—  
   *Trabutia cayennensis*  
  
*Ficus ? scandens*—  
   *Catacauma aspidea*  
  
*Ficus* sp.—  
   *Capnodium lanosum*  
   *Cercospora annulata*  
   *Septoria brachyspora*  
   *Trabutia butleri*  
   *Xylaria deserticola* (roots)  
  
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   *Cintractia axicola*  
  
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   *Phyllachora ? fimbristylicola*  
  
*Fimbristylis miliacea*—  
   *Puccinia flavipes*  
  
*Floscopa scandens*—  
   *Uromyces floscopae*  
  
*Fluggea microcarpa*—  
   *Masseoella fluggeae*  
  
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   *Cercospora foeniculi*
- Fragaria vesca*—  
   *Puccinia fragariae*  
  
*Fragaria* sp.—  
   *Septoria aciculosa*  
   *Sphaerella fragariae*  
  
*Fuirena glomerata*—  
   *Uredo fuirenae*  
  
*Fuirena umbellata*—  
   *Uredo fuirenae*  
  
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   *Entyloma fumariae*  
   *Peronospora affinis*  
   *Sclerotinia sclerotiorum*  
  
*Furcraea gigantea*—  
   *Phoma fourcroyae*  
  
*Galium aparine*—  
   *Phakopsora punctiformis*  
   *Puccinia punctata*  
  
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   *Erysiphe cichoracearum*  
  
*Galium* sp.—  
   *Pseudopeziza repanda*  
  
*Gardenia gummifera*—  
   *Balladyna gardeniae*  
   *Corticium koleroga*  
   *Hemileia ? vastatrix*  
  
*Gaultheria nummularioides*—  
   *Thekopsora gaultheriae*  
  
*Gentiana kurroo*—  
   *Puccinia gentianae*  
  
*Geranium nepalense*—  
   *Aecidium infrequens*  
   *Puccinia geranii-silvatici*  
  
*Geranium wallichianum*—  
   *Uromyces geranii*  
  
*Gerbera lanuginosa*—  
   *Aecidium crypticum*  
  
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   *Pythium de Baryanum*  
  
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   *Aecidium innatum*  
  
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   *Phyllosticta glycines*  
  
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   *Diplodia gossypina*  
   *Fusarium vasinfectum*  
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   *Tetragomyces indicus*  
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   *Nectria tjbodensis*  
*Guazuma* sp.—  
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   *Cystopus candidus*  
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   *Gloeosporium paradoxum*  
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   *Taphrina maculans*  
*Hedyotis curricularia*—  
   *Puccinia lateritia*  
*Hedyotis nitida*—  
   *Acididium hedyotidis*  
*Hedyotis vestita*—  
   *Puccinia lateritia*  
*Helicteres isora*—  
   *Helminthosporium obelavatum*  
*Hemidesmus indicus*—  
   *Acididium hemidesmi*  
   *Uredo hemidesmi*  
*Hemigraphis latebrosa*—  
   *Uromyces mac-intirianus*  
*Heptapleurum venulosum*—  
   *Acrosporum parasiticum*  
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   *Triphragmium thwaitesii*
- Heracleum* sp.—  
   *Hendersonia heraclei*  
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   *Fomes rimosus* (wood)  
   *Polyporus rhodophaeus* (wood)  
*Heterophragma roxburghii*—  
   *Meliola oescentiae*  
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   *Botryodiplodia theobromae*  
   *Colletotrichum heveae*  
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   *Nectria diversispora*  
   *Phytophthora arecae*  
   *P. meadii*  
   *P. palmivora*  
   *Sphaerella heveae*  
   *Sphaerostilbe repens*  
   *Ustilina zonata*  
*Hibiscus cannabinus*—  
   *Cercospora hibisci*  
   *Diplodia hibiscina*  
   *Macrophomina phaseoli*  
   *Phyllosticta hibisci*  
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   *Asterina holarrhenae*  
   *Hemileia holarrhenae*  
   *Meliola simillima*  
   *Spegazzinia meliolae* (on *Meliola*)  
*Holigarna grahamii*—  
   *Meliola holigarnae*  
*Holigarna longifolia*—  
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   *Erysiphe graminis*  
   *Helminthosporium gramineum*  
   *H. sativum*  
   *H. teres*  
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   *Phyllosticta hoyae*  
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   *Puccinia hydrocotyles*  
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   *Blastospora hygrophilae*  
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   *Chnoospora sancti-johannis*  
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*Indigofera limifolia*—  
   *Uromyces orientalis*  
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*Ipomoea cymosa*—  
   *Erysiphe polygoni*  
*Ipomoea eriocarpa*—  
   *Cystopus ipomoeae-panduratae*  
*Ipomoea hederacea*—  
   *Accidium kaernbachii*  
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   *Cystopus ipomoeae-panduratae*  
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   *Cystopus ipomoeae-panduratae*  
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   *Choanophora simsoni*  
*Ipomoea* sp.—  
   *Meliola clavulata*  
   *Phyllosticta ipomoeae*  
*Iris florentina*—  
   *Puccinia iridis*  
*Iris kashmiriana*—  
   *Puccinia iridis*  
*Iris pallida*—  
   *Puccinia iridis*  
*Iris* sp.—  
   *Microdiplodia indica*  
*Ischaemum angustifolium*—  
   *Ustilago indica*  
*Ischaemum aristatum*—  
   *Sorosporium furcatum*  
*Ischaemum ciliare* var. *wallichii*—  
   *Puccinia incompleta*  
*Ischaemum laxum*—  
   *Phyllachora ischaemi*  
*Ischaemum pilosum*—  
   *Sphaelia* sp.  
*Ischaemum spathiflorum*—  
   *Ustilago burmanica*  
*Ischaemum timorense*—  
   *Sorosporium flagellatum*  
   *Uredo ischaemi*  
*Ischaemum* sp.—  
   *Ustilago tonghinensis*  
*Isilema laxa*—  
   *Ustilago inayati*  
   *U. isilematis*

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- Ixora parviflora*—  
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*Ixora polyantha*—  
   Phyllachora ixorae  
*Ixora undulata*—  
   Daldinia concentrica (wood)  
*Jambosa* : see *Eugenia*  
*Jasminum arborescens*—  
   Dendrophoma jasmini (branches)  
   Fusicladium butleri  
   Microdiplodia jasmini  
   Uromyces hobsoni  
*Jasminum auriculatum*—  
   Meliola ? jasminicola  
*Jasminum grandiflorum*—  
   Uromyces hobsoni  
*Jasminum humile*—  
   Puccinia chrysopogi  
   Septoria aitchisoni  
*Jasminum malabaricum*—  
   Asterina spissa  
   Blastospora butleri  
   Robinosphaeria profusa  
   Meliola ? jasminicola  
   Uromyces hobsoni  
*Jasminum officinale*—  
   Uromyces hobsoni  
*Jasminum pubescens*—  
   Uromyces comedens  
*Jasminum sambac*—  
   Meliola jasminicola  
*Jasminum* sp.—  
   Alternaria dianthi  
   Corticium koleroga  
   Sirococcus butleri  
*Jatropha curcas*—  
   Fusicoccum jatrophae  
*Jatropha glandulifera*—  
   Phytophthora arecae  
*Jatropha integerrima*—  
   Colletotrichum jatrophae  
*Jatropha nana*—  
   Cercospora ajrekari  
*Juglans regia*—  
   Microstroma juglandis  
   Phyllactinia corylea  
*Juglans* sp.—  
   Fomes fomentarius (wood)  
*Justicia diffusa*—  
   Puccinia peraffinis  
*Justicia gendarussa*—  
   Puccinia thwaitesii  
*Justicia procumbens*—  
   Synchytrium rytzii  
*Justicia* sp.—  
   Plasmopara wildemaniana  
   Synchytrium rytzii  
*Kyllinga triceps*—  
   Puccinia mysorensis  
*Lactarius* sp.—  
   Hypomyces floccosus  
*Lactuca dissecta*—  
   Bremia lactucae  
*Lactuca macrorhiza*—  
   Puccinia prenanthis-purpureae var. hima-  
     lensis  
*Lactuca scariola*—  
   Bremia lactucae  
*Lactuca* sp.—  
   Septoria lactucae  
*Lagenaria vulgaris*—  
   Pythium aphanidermatum  
   Sphaerella citrullina  
   Sphaerotheca humuli var. fuliginea  
   Synchytrium rytzii  
*Lagerstroemia lanceolata*—  
   Rhytisma lagerstroemiae  
*Lannea* : see *Odina*  
*? Lasianthus* sp.—  
   Aecidium flavidum  
*Lathyrus sativus*—  
   Peronospora viciae  
   Sclerotinia sclerotiorum  
*Lathyrus sphaericus*—  
   Uromyces fabae  
*Lathyrus* sp.—  
   Erysiphe polygoni  
*Launaea asplenifolia*—  
   Puccinia butleri  
   see *P. macrorhynchi*  
*Launaea nudicaulis*—  
   Bremia lactucae  
   Puccinia inayati  
   *P. sonchi*  
*Launaea pinnatifida*—  
   Aecidium microrhynchi  
*Laurus* sp.—  
   Stomiopeltis aspersa  
*Lawsonia alba*—  
   Asterina lawsoniae  
   Corticium koleroga  
*Lecanium colemanii* (insect)—  
   Empusa lecanii  
*Lecanium hemisphaericum* (insect)—  
   Cephalosporium lecanii  
*Lecanium hemisphaericum* var. *coffee* (insect)—  
   Hypocrella javanica  
*Lecanium marsupiale* (insect)—  
   Hypocrella reinckeana

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- Lecanium viride* (insect)—  
   *Cephalosporium lecanii*  
   *Empusa lecanii*  
*Lecanium* sp. (insect)—  
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*Lens esculenta*—  
   *Sclerotinia sclerotiorum*  
   *Sclerotium rolfsii*  
   *Uromyces fabae*  
*Leonotis nepetifolia*—  
   *Puccinia leonotidicola*  
*Lepidagathis hyalina*—  
   *Aecidium lepidagathis*  
*Lepidagathis* sp.—  
   *Synchytrium rytzii*  
*Lepidium sativum*—  
   *Pythium de Baryanum*  
   *P. monospermum*  
*Leptodermis lanceolata*—  
   *Coleosporium leptodermidis*  
   *Puccinia leptodermidis*  
*Lespedeza bicolor*—  
   *Erysiphe polygoni*  
   *Uromyces lespedezae-procumbentis*  
*Lettsomia elliptica*—  
   *Aecidium argyreiae*  
*Leucaena glauca*—  
   *Cladosporium subtile*  
*Leucas aspera*—  
   *Synchytrium rytzii*  
*Leucas hyssopifolia*—  
   *Catinula leucoxantha*  
*Leucas urticaefolia*—  
   *Puccinia leucadis*  
*Leucas* sp.—  
   *Sclerotinia sclerotiorum*  
   *Septoria bakeri*  
   *Synchytrium rytzii*  
*Ligusticum thomsoni*—  
   *Erysiphe polygoni*  
*Limnanthemum nymphoides*—  
   *Septoria villarsiae*  
*Limnanthemum* sp.—  
   *Puccinia soirpi*  
*Linum usitatissimum*—  
   *Fusarium lini*  
   *Melampsora lini*  
   *Sclerotinia sclerotiorum*  
*Lipocarpa sphaelata*—  
   *Uredo lipocarphae*  
*Litsea angustifolia*—  
   *Rosellinia bunodes*  
*Litsea wightiana*—  
   *Rosellinia bunodes*  
*Livistona australis*—  
   *Pestalozzia fuscescens*  
*Lonicera diversifolia*—  
   *Hendersonia obtusa*  
*Lonicera* sp.—  
   *Lasiobotrys butleri*  
*Loranthus longiflorus*—  
   *Aecidium luculentum*  
*Luffa acutangula*—  
   *Pseudoperonospora cubensis*  
   *Pythium aphanidermatum*  
*Luffa aegyptiaca*—  
   *Pseudoperonospora cubensis*  
   *Pythium aphanidermatum*  
*Luzula campestris*—  
   *Puccinia obscura*  
*Lychnis indica*—  
   *Uromyces behenii*  
*Lycopersicon esculentum*—  
   *Cladosporium fulvum*  
   *Corticium solani*  
   *Macrophomina phaseoli*  
   *Phytophthora infestans*  
*Maba buxifolia*—  
   *Aecidium melaleucum*  
*Maba buxifolia* var. *ebenus*—  
   *Aecidium melaleucum*  
*Macropanax* sp.—  
   *Hemileia indica*  
*Macrorrhynchus asplenifolius*—  
   *Puccinia macrorrhynchi*  
*Mallotus philippinensis*—  
   *Phyllosticta marmorata*  
*Man*—  
   *Aetnomyces bovis*  
   *Monilia albicans*  
   *M. krusei*  
   *M. psilosis*  
   *Pityrosporum ovale*  
   *Rhinosporidium seeberi*  
   *Sporotrichum beurmannii*  
   *Trichophyton rosaceum*  
   *T. viannai*  
*Mangifera indica*—  
   *Capnodium ramosum*  
   *Coecomycetes vilis*  
   *Daedalea boreii* (wood)  
   *Dimerosporium mangiferum*  
   *Dothiorella mangiferae*  
   *Erysiphe cichoracearum*  
   *Hendersonia creberrima*  
   *Massarina usambarensis*  
   *Meliola mangiferae*  
   *Physalospora rhodina*  
   *Phytophthora arecae*  
   *Rhinoctadium corticolum*  
   *Starbacekiella mangiferae*  
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   *Cercospora cearae*

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- Manihot utilisima*—  
 Botryodiplodia manihoticola (bark)  
 Cercospora henningsii  
 Diplodia manihotis  
 Ophiobolus manihotis  
*Manisuris granularis*—  
 Ustilago erythraeensis  
*Marsdenia* sp.—  
 Asterina travancorensis  
*Medicago denticulata*—  
 Peronospora trifoliorum  
 Uromyces striatus  
*Medicago lupulina*—  
 Parodiella perisporioides  
 Peronospora trifoliorum  
 Pseudopeziza medicaginis  
 Sclerotinia sclerotiorum  
*Medicago sativa*—  
 Helicobasidium purpureum  
 Macrophomina phaseoli  
 Oidiopsis taurica  
 Peronospora trifoliorum  
 Pseudopeziza medicaginis  
 Sclerotium rolfsii  
 Uromyces striatus  
 Urophlyctis alfaiae  
*Melastoma* sp.—  
 Munkiodothis melastomata  
*Melia azedarach*—  
 Cercospora subsessilis  
*Melilotus alba*—  
 Erysiphe polygoni  
 Peronospora trifoliorum  
*Melilotus indica*—  
 Erysiphe polygoni  
 Peronospora trifoliorum  
*Melilotus parviflora*—  
 Peronospora trifoliorum  
*Meliola* sp.—  
 Spogazzinia meliolae  
*Meliosma simplicifolia*—  
 Accidium meliosmatis-myrianthi  
*Memecylon edule*—  
 Asterina memecylonicae  
 Glenospora uromycoides  
 Meliola memecyli  
 Phyllachora aliena  
*Menispermum cordifolium*: see *Tinospora*  
*Mentha sylvestris*—  
 Puccinia menthae—  
*Merendera aitchisoni*—  
 Accidium merenderae  
*Mesua ferrea*—  
 Diaporthe curvatispora (bark)  
*Michelia nilagirica*—  
 Phyllachorella micheliae  
*Microchloa setacea*—  
 Ustilago microchloae  
*Microhynchus*: see *Launaea*  
*Mimosa* sp.—  
 Phyllachora rhytismoides  
*Mimusops elengi*—  
 Uromyces mimusops || 2P  
*Mimusops hexandra*—  
 Robillarda scutata || 7P  
*Momordica balsamina*—  
 Erysiphe cichoracearum  
*Momordica charantia*—  
 Cercospora momordicae  
*Morinda tinctoria*—  
 Cercospora morindae  
*Moringa* sp.—  
 Botryodiplodia hypoxylodea (bark)  
*Morus alba*—  
 Accidium mori  
 Cytospora ? atra  
 Diplodia butleri  
 Macrophomina phaseoli  
 Phleospora mori  
 Phyllactinia corylea  
 Thyrostroma mori  
*Morus indica*—  
 Accidium mori  
 Trichosporium atterimum (bark)  
*Morus serrata*—  
 Accidium mori  
*Morus* sp.—  
 Cryptovalsa rabenhorstii  
 Diplodia mori  
 D. morina  
 Ganoderma lucidum (wood)  
 Polyporus hispidus  
*Mucuna deeringiana*—  
 Uromyces mucunae  
*Mucuna ? pruriens*—  
 Uromyces mucunae  
*Murraya koenigii*—  
 Phyllostictina murrayae  
*Musa paradisica*—  
 Gloeosporium musarum  
 Macrophoma musae  
*Musa sapientum*—  
 Diplodia musae  
 Macrophoma musae  
*Musa* sp.—  
 Fusarium cubense  
*Musca* sp. (insect)—  
 Empusa muscae  
*Myriactis nepalensis*—  
 Accidium myriactidis  
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- Myristica "churra"*—  
     Cladosporium scopiformis  
*Myrsine africana*—  
     Corynelia fructicola  
*Mytilaspis piperis* (insect)—  
     Sphaerostilbe auranticola  
*Nasturtium palustre*—  
     Cystopus candidus  
*Nauclea* sp.—  
     Fomes pectinatus (wood)  
*Nerium odorum*—  
     Botryodiplodia nerii  
*Nerium oleander*—  
     Cercospora neriella  
*Neyraudia madagascarensis*—  
     Puccinia neyraudiae  
*Nicotiana plumbaginifolia*—  
     Alternaria violae  
*Nicotiana tabacum*—  
     Cercospora nicotianae  
     Erysiphe cichoracearum  
     Macrophomina phaseoli  
     Pythium aphanidermatum  
*Niphobolus fissus*—  
     Corticium koleroga  
*Nothopegia colobrookiana*—  
     Asterina nothopogiae  
*Nymphaea lotus*—  
     Entyloma nymphaeae  
*Nymphaea stellata*—  
     Doassansia nymphaeae  
     Entyloma nymphaeae  
*Ocimum canum*—  
     Aecidium leiocarpum  
     A. ocimi  
*Ocimum* sp.—  
     Coleosporium plectranthi  
*Ocina wodier*—  
     Cerotelium lanneae  
     Meliola geniculata  
*Oedogonium* sp.—  
     Olpidium indicum  
*Oldenlandia aspera*—  
     Coleosporium oldenlandiae  
*Olea dioica*—  
     Cystospora oleae  
*Olea* sp.—  
     Meliola amphitricha  
*? Ononis* sp.—  
     Uromyces sphaeropleus  
*Ophelia* : see *Swertia*  
*Ophiurus corymbosus*—  
     Uredo ophiuri  
     Ustilago cornuti  
*Opilia amentacea*—  
     Asterina crebra  
     Meliola opiliae  
*Opismenus compositus*—  
     Diorchidium levigatum  
     Puccinia opismeni  
     Ustilago vittata  
*Opuntia dilleanii*—  
     Pythium aphanidermatum  
*Oreochthilus feae* (insect)—  
     Laboulbenia oreochthilicola  
*Oreochthilus lucidus* (insect)—  
     Laboulbenia crassipes  
*Oreochthilus typus* (insect)—  
     Laboulbenia oreochthili  
*? Oreochthilus* sp. (insect)—  
     Laboulbenia coarctata  
*Origanum vulgare*—  
     Puccinia menthae  
*Oryctes rhinoceros* (insect)—  
     Metarrhizium anisopliae  
*Oryza sativa*—  
     Cercospora oryzae  
     Entyloma oryzae  
     Ephelis oryzae  
     Helminthosporium oryzae  
     Leptosphaeria culmifraga  
     Melanomma glumarum  
     Melanospora zamiae  
     Metasphaeria albescens  
     Nectria bolbophylli  
     Nigrospora sphaerica  
     Ophiobolus oryzae  
     Phaeosphaeria oryzae  
     Phoma glumarum  
     P. oryzae  
     Phyllosticta miurai  
     Piricularia oryzae  
     Pyrenochaete oryzae  
     Sclerotium oryzae  
     Sphaerella malinverniana  
     Tilletia horrida  
     Ustilaginoides virens  
*Oryzopsis holciforme*—  
     Puccinia himalensis  
*Oryzopsis molinioides*—  
     Puccinia oryzopsidis  
*Oryzopsis* sp.—  
     Phyllachora graminis  
*Osmanthus fragrans*—  
     Aecidium osmanthi  
*Oxalis corniculata*—  
     Colletotrichum punctiformis  
*Oxalis stricta*—  
     Colletotrichum punctiformis  
*Paederia foetida*—  
     Aecidium paederiae  
     Uredo paederiae

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- Paeonia emodii*—  
*Septoria macropora*  
*Panax*: see *Aralia*  
*Pancratium* sp.—  
*Aecidium amaryllidis*  
*Pandanus furcatus*—  
*Anthostomella pandani*  
*Pandanus odoratissimus*—  
*Aulographum pandani*  
*Pandanus* sp.—  
*Phomopsis pandani*  
*Panicum antidotale*—  
*Cerebella antidotale*  
*Tilletia tumefaciens*  
*Uromyces superfluous*  
*Panicum colonum*—  
*Phyllachora graminis*  
*Ustilago trichophora*  
*Panicum distachyum*—  
*Balansia sclerotica*  
*Cerebella cynodontis*  
*Panicum frumentaceum*—  
*Acrothecium lunatum*  
*Ustilago panici-frumentacei*  
*U. paradoxa*  
*Panicum isachnes*—  
*Uromyces leptodermis*  
*Panicum javanicum*—  
*Cerebella inquinans*  
*Uromyces leptodermis*  
*Panicum miliaceum*—  
*Ustilago panici-miliacei*  
*Panicum miliare*—  
*Uromyces linearis*  
*Panicum patens*—  
*Phyllachora graminis*  
*Panicum prostratum*—  
*See Balansia thanatophora*  
*Cerebella cynodontis*  
*Dierchidium orientale*  
*Uromyces leptodermis*  
*Ustilago operta*  
*Panicum ramosum*—  
*Dierchidium orientale*  
*Phyllachora graminis*  
*Piricularia*? *oryzae*  
*Panicum repens*—  
*Piricularia*? *oryzae*  
*Uromyces linearis*  
*Ustilago digitariae*  
*Panicum sanguinale*—  
*Ephelis*? *japonica*  
*Piricularia*? *oryzae*  
*Puccinia paspali*  
*Ustilago rebenhorstiana*  
*Panicum sanguinale* var. *ciliare*—  
*Cerebella inquinans*  
*Puccinia paspali*  
*Panicum sanguinale* var. *debile*—  
*Puccinia paspali*  
*Panicum seligerum*—  
*Cerebella burmanensis*  
*Panicum villosum*—  
*Ustilago operta*  
*Panicum* sp.—  
*Entyloma speciosum*  
*Papaver somniferum*—  
*Erysiphe polygoni*  
*Peronospora arborescens*  
*Paramignya monophylla*—  
*Aecidium petchii*  
*Pardanthus*: see *Belamcanda*  
*Paspalum kora*—  
*Ephelis japonica*  
*Paspalum longiflorum*—  
*Cerebella inquinans*  
*Paspalum royleanum*—  
*Cerebella inquinans*  
*Ustilago royleana*  
*Paspalum sanguinale*: see *Panicum*  
*Paspalum scrobiculatum*—  
*Cerebella inquinans*  
*Dimerosporium erysiphoides*  
*Sorosporium paspali*  
*Uredo paspali-scrobiculati*  
*Pavetta indica*—  
*Aecidium*? *flavidum*  
*A. pavettas*  
*Pedilanthus tithymaloides*—  
*Cercospora euphorbiae*  
*Diplodia pedilanthi*  
*Diplodina pedilanthi*  
*Pennisetum alopecuroides*—  
*Sphaelia* sp.  
*Pennisetum cenchroides*—  
*Cerebella cenchroidis*  
*Pennisetum orientale*—  
*Neovossia barclayana*  
*Pennisetum typhoideum*—  
*Acrothecium penniseti*  
*Puccinia penniseti*  
*Sclerospora graminicola*  
*Tolyposporium penicillariae*  
*Pennisetum* sp.—  
*Chaetomella atra*  
*Pergularia pallida*—  
*Aecidium ponderosum*  
*Perilla ocymoides*—  
*Colosporium perillae*  
*Peristrophe bicalyculata*—  
*Plasmopara wildemaniana*  
*Synchytrium ryztii*

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- Peristrophe* sp.  
   *Aecidium peristrophes*  
   *Synechytrium rytzii*  
*Phalaris minor*—  
   *Puccinia glumarum*  
*Phaseolus aconitifolius*—  
   *Cercospora cruenta*  
   *Sphaerotheca humuli* var. *fuliginea*  
*Phaseolus lunatus*—  
   *Macrophomina phaseoli*  
*Phaseolus mungo*—  
   *Uromyces appendiculatus*  
*Phaseolus mungo* var. *radiatus*—  
   *Acanthostigma heterochaeta*  
   *Ascochyta phaseolorum*  
   *Cercospora cruenta*  
   *Cicinobolus cesatii* (on *Oidium*)  
   *Macrophomina phaseoli*  
   *Uromyces appendiculatus*  
*Phaseolus vulgaris*—  
   *Ascochyta phaseolorum*  
   *Cercospora cruenta*  
   *Colletotrichum lindemuthianum*  
   *Uromyces appendiculatus*  
*Pheropsophus* ? *africanus* (insect)—  
   *Laboulbenia pheropsophi*  
*Pheropsophus* sp. (insect)—  
   *Enarthromyces indicus*  
*Philonthus* sp. (insect)—  
   *Dichomyces hybridus*  
*Phlogocanthus guttatus*—  
   *Puccinia phlogocanthi*  
*Phlomis bracteosa*—  
   *Puccinia excelsa*  
*Phlomis stewartii*—  
   *Erysiphe galeopsidis*  
*Phoenix acaulis*—  
   *Graphiola phoenicis*  
*Phoenix dactylifera*—  
   *Graphiola phoenicis*  
   *Pestalozzia phoenicis*  
   *Polyporus adustus* (trunk)  
*Phoenix humilis*—  
   *Exosporium palmivorum*  
   *Meliola palmicola*  
*Phoenix paludosa*—  
   *Graphiola phoenicis*  
*Phoenix sylvestris*—  
   *Graphiola applanata*  
   *G. phoenicis*  
   *Meliola* ? *amphitricha*  
   *M. palmicola*  
*Phragmites karka*—  
   *Meliola arundinis*  
   *Puccinia invenusta*  
*Phyllanthus distichus*—  
   *Phakopsora phyllanthi*
- Phyllanthus emblica*—  
   *Aspergillus ustilago*  
   *Ravenelia emblicae*  
*Phyllanthus reticulatus*—  
   *Aecidium phyllanthi*  
*Physalis minima* var. *indica*—  
   *Entyloma physalidis*  
*Picea excelsa*—  
   *Lophodermium pinastri*  
*Picea morinda*—  
   *Armillaria mellea*  
   *Chrysomyxa deformans*  
   *C. piccae*  
   *Collybia maculata*  
   *Fomes annosus*  
   *Peridermium piceae*  
   *P. thomsoni*  
*Pieris ovalifolia*—  
   *Exobasidium pieridis*  
   *Rhytisma piceum*  
*Pilea trinervia*—  
   *Uredo pileae*  
*Pimpinella diversifolia*—  
   *Puccinia pimpinellae*  
*Pinophilus* sp. (insect)—  
   *Clematomyces pinophili*  
   *Sphaleromyces indicus*  
*Pinus excelsa*—  
   *Capnodium pini*  
   *Peridermium brevius*  
   *P. indicum*  
   *Trametes pini*  
*Pinus longifolia*—  
   *Peridermium himalayense*  
   *P. orientale*  
   *Trametes pini* (wood)  
*Piper belle*—  
   *Corticium solani*  
   *Nectria bolbophylli*  
   *Phragmocapniae betle*  
   *Phytophthora* ? *parasitica*  
   *Sclerotium rolfsii*  
*Piper nigrum*—  
   *Colletotrichum necator*  
   *Macrophoma piperina*  
   *Nectria bolbophylli*  
   *Physalospora piperina*  
   *Rosellinia bunodes*  
*Pisum arvense*—  
   *Peronospora viciae*  
   *Uromyces fabae*  
*Pisum sativum*—  
   *Erysiphe polygoni*  
   *Peronospora viciae*  
   *Sclerotinia sclerotiorum*  
   *Uromyces fabae*  
*Pithecolobium dulce*—  
   *Phyllosticta ingae-dulcis*

## HOST INDEX—contd.

*Pithecolobium* sp.—  
     *Diplodia pithecolobii*  
*Pittosporum dasycaulon*—  
     *Meliola elmeri*  
*Plantago brachyphylla*—  
     *Erysiphe cichoracearum*  
*Plantago major*—  
     *Erysiphe cichoracearum*  
*Plantago* sp.—  
     *Septoria plantaginea*  
*Plectranthus coetse*—  
     *Aecidium plectranthi*  
*Plectranthus gerardianus*—  
     *Coleosporium plectranthi*  
*Plectranthus rugosus*—  
     *Erysiphe polygoni*  
     *Peronospora laanii*  
*Plectranthus scrophularioides*—  
     *Aecidium plectranthi*  
*Plectronia parviflora*—  
     *Corticium koleroga*  
     *Hemileia canthii*  
     *Meliola asterinoides* var. *major*  
*Plectronia rheedii*—  
     *Hemileia canthii*  
*Plectronia umbellata*—  
     *Meliola asterinoides* var. *major*  
*Pleopeltis linearis*—  
     *Corticium koleroga*  
*Poa flexuosa*—  
     *Puccinia coronata*  
*Podocarpus* sp.—  
     *Corynelia clavata*  
*Podontia 14-punctata* (insect)—  
     *Laboulbenia podontiae*  
*Pogonatherum saccharoideum*—  
     *Phyllachora pogonatheri*  
*Pogostemon* sp.—  
     *Puccinia princeps*  
*Poinciana alata*—  
     *Septogloeum poinciana*  
*Pollanthes tuberosa*—  
     *Phoma polyanthis*  
*Pollinia argentea*—  
     *Cintractia cryptica*  
*Pollinia grata*—  
     *Phyllachora graminis*  
*Pollinia nuda*—  
     *Puccinia pollinae*  
 " *Pollinia japonica* "—  
     *Puccinia eulaliae*  
*Polygala crillata*—  
     *Aspengillus flavus* (roots)  
*Polygonatum* sp.—  
     *Phyllostictina cruenta*

*Polygonum alatum*—  
     *Puccinia solmsii*  
*Polygonum amplexicaule*—  
     *Puccinia nitida*  
*Polygonum aviculare*—  
     *Erysiphe polygoni*  
     *Uromyces polygoni*  
*Polygonum chinense*—  
     *Erysiphe emodensis*  
     *Puccinia nitida*  
     *P. solmsii*  
     *Ustilago tuberculiformis*  
*Polygonum glabrum*—  
     *Aecidium polygoni-cuspidati*  
     *Melanopsichium austro-americanum*  
     *Sphacelotheca hydropiperis*  
     *Ustilago utriculosa*  
*Polygonum hydropiper*—  
     *Aecidium polygoni-cuspidati*  
*Polygonum persicaria*—  
     *Puccinia polygoni-amphibii*  
     *Sphacelotheca hydropiperis*  
*Polygonum posumbu*—  
     *Sphacelotheca hydropiperis*  
*Polygonum serrulatum*—  
     *Sphacelotheca hydropiperis*  
*Polygonum tomentosum*—  
     *Ustilago utriculosa*  
*Polygonum* sp.—  
     *Didymella kariana*  
     *Septoria polygonicola*  
     *Ustilago ocrearum*  
*Pongamia glabra*—  
     *Cryptomyces pongamiae*  
     *Ganoderma lucidum*  
     *Phyllachora pongamiae*  
     *Phyllosticta pongamiae*  
     *Ravenelia hobsoni*  
*Populus alba*—  
     *Melampsora ? rostrupii*  
*Populus ciliata*—  
     *Boerlagella effusa* (wood)  
     *Cytospora chrysosperma*  
     *Linospora populina*  
     *Melampsora ciliata*  
     *Nectria cinnabarina*  
     *Taphrina aurea*  
     *Uncinula necator*  
*Populus* sp.—  
     *Fomes fomentarius* (wood)  
*Portulaca oleracea*—  
     *Cystopus portulacae*  
*Portulaca quadrifida*—  
     *Cystopus portulacae*  
*Potamogeton* sp.—  
     *Doassansia martianoffiana*



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- Potentilla argyrophylla*—  
     Phragmidium laceianum  
*Potentilla fragarioides*—  
     Phragmidium potentillae  
*Potentilla nepalensis*—  
     Phragmidium nepalense  
*Pothos scandens*—  
     Asterinella malabarensis  
*Pouzolzia pentandra*—  
     Uredo pouzolziae  
*Prenanthes brunoniana*—  
     Puccinia prenanthis-purpureae var. himalensis  
*Primula* sp.—  
     Botrytis vulgaris  
*Prunus amygdalus*—  
     Sphaerotheca pannosa  
*Prunus armeniaca*—  
     Nectria cinnabarina  
     Phyllosticta prunicola  
     Polyporus hispidus  
     Puccinia pruni-spinosae  
*Prunus avium*—  
     Phyllosticta prunicola  
*Prunus communis*—  
     Phyllosticta prunicola  
     Puccinia pruni-spinosae  
*Prunus domestica* var. *insititia*—  
     Polystigma rubra  
*Prunus pudus*—  
     Polystigma ochraceum  
     Taphrina pruni  
*Prunus persica*—  
     Botryodiplodia persicae  
     Botryosphaeria ? pruni-spinosae  
     Phyllosticta persicae  
     Puccinia pruni-persicae  
     P. pruni-spinosae  
     Sclerotinia cinerea  
     Sphaerotheca pannosa  
     Taphrina deformans  
*Prunus pildum*—  
     Puccinia pruni-spinosae  
*Pseudanthistiria hispida*—  
     Sorosporium pseudanthistiriae  
*Pteris quadriaurita*—  
     Taphrina laurencia  
     T. rhomboidalis  
*Pterospermum* sp.—  
     Meliola pterospermi  
*Puccinia* sp.—  
     Darlucella filum  
*Pueraria* sp.—  
     Woroninella puerariae  
*Punica granatum*—  
     Aspergillus castaneus  
     Ceroospora punicea  
*Putranjiva roxburghii*—  
     Phyllostictina putranjivae  
*Pygeum* sp.—  
     Accidium pygei  
*Pyrus communis*—  
     Entomosporium maculatum  
     Nectria cinnabarina  
     Phyllactinia corylea  
     Phyllosticta pirina  
*Pyrus malus*—  
     Coniothecium chomatosporum  
     Leptothyrium pomi  
     Podosphaera leucotricha  
     Polyporus hispidus  
     Sphaeropsis ? malorum  
*Pyrus pashia*—  
     Entomosporium maculatum  
     Gymnosporangium cunninghamianum  
     Phyllactinia corylea  
*Pyrus variolosa*—  
     Gymnosporangium cunninghamianum  
*Pyrus* sp.—  
     Daesycepha clandestina  
     Vibrissea stilboidea  
     V. turbinella  
*Quercus dealbata*—  
     Bispora catenula  
*Quercus* sp.—  
     Lasiobotrys elegans  
     Leucoconis erysiphina  
     Phyllosticta exigua  
     Trichothyriella quercigena  
*Randia uliginosa*—  
     Hemileia ? woodii  
*Ranunculus diffusus*—  
     Erysiphe polygoni  
*Ranunculus hirtellus*—  
     Accidium "ranunculacearum"  
*Ranunculus laetus*—  
     Erysiphe polygoni  
*Ranunculus pulchellus*—  
     Puccinia ustalis  
*Ranunculus* sp.—  
     Entyloma ranunculi  
*Raphanus sativus*—  
     Cystopus candidus  
     Peronospora parasitica  
*Rhamnus dahurica*—  
     Puccinia himalensis  
*Rhamnus procumbens*—  
     Puccinia coronata  
*Rhamnus purpurea*—  
     Puccinia coronata  
*Rhamnus virgata*—  
     Puccinia himalensis  
*Rhizophora* sp.—  
     Polyporus scopulosus (wood)

## HOST INDEX—contd.

- Rhododendron arboreum*—  
   *Chrysomyxa dietelii*  
   *C. himalensis*  
   *Exobasidium butleri*  
*Rhododendron campanulatum*—  
   *Accidium* sp., see *Chrysomyxa*  
   *Dothiorella himalayensis*  
*Rhododendron lepidotum*—  
   *Accidium* sp., see *Chrysomyxa*  
   *Chrysomyxa* ? *dietelii*  
*Ribes rubrum*—  
   *Cronartium ribicola*  
*Ricinus communis*—  
   *Cercosporina ricinella*  
   *Diplodia ricinicola*  
   *Helotium pusense*  
   *Melampsora ricini*  
   *Phyalospora ventricosa* (stem)  
   *Phytophthora parasitica*  
   ? *Pythium aphanidermatum* (roots)  
   *Sclerotinia ricini*  
*Rosa centifolia*—  
   *Cercospora rosicola*  
   *Phragmidium rosae-moschatae*  
*Rosa damascena*—  
   *Cercospora rosicola*  
*Rosa macrophylla*—  
   *Apiospora rhodophila*  
   *Phragmidium butleri*  
   *Puccinia rosae*  
*Rosa moschata*—  
   *Phragmidium rosae-moschatae*  
*Rosa webbiana*—  
   *Phragmidium egenulum*  
   *P. rosae-moschatae*  
*Rosa* sp.—  
   *Diploecarpon rosae*  
   *Hypoxyloa rubiginosum* (twig)  
   *Massaria marginata*  
   *Phragmidium disciflorum*  
   *Septoria rosae*  
   *S. rosarum*  
   *Sphaerella roseigena*  
   *Sphaerotheca pannosa*  
   *Valsa ceratophora* var. *rosarum*  
*Rosa alpina*—  
   *Puccinia rosaceae*  
*Rottboellia compressa*—  
   *Puccinia cacao*  
   *Uredo rottboelliae*  
   *Ustilago rottboelliae*  
*Rottboellia exaltata*—  
   *Phyllachora rottboelliae*  
*Rottboellia speciosa*—  
   *Uromyces rottboelliae*  
*Rubia cordifolia*—  
   *Puccinia colletiana*  
   *Rubus biflorus*—  
     *Phragmidium quinqueloculare*  
   *Rubus ellipticus*—  
     *Cercospora rubi*  
     *Phragmidium orientale*  
     *P. rubi*  
   *Rubus fruticosus*—  
     *Phragmidium rubi*  
   *Rubus idaeus*—  
     *Septoria rubi*  
   *Rubus lasiocarpus*—  
     *Phragmidium assamense*  
     *P. burmanicum*  
     *Septoria rubi*  
   *Rubus paniculatus*—  
     *Phragmidium incompletum*  
   *Rubus rosae-folius*—  
     *Phragmidium octoloculare*  
   *Rubus* sp.—  
     *Hamaspora longissima*  
   *Ruellia longifolia*—  
     *Puccinia ruelliae*  
   *Ruellia prostrata*—  
     *Puccinia ruelliae*  
   *Ruellia* sp.—  
     *Puccinia lateripes*  
*Rumex nepalensis*—  
   *Erysiphe polygoni*  
   *Puccinia nepalensis*  
*Rumex orientalis*—  
   *Erysiphe polygoni*  
   *Puccinia nepalensis*  
*Rumex vesicarius*—  
   *Peronospora rumicis*  
*Rumex* sp.—  
   *Puccinia dissiliens*  
   *P. phragmitis*  
   *Ustilago goeppertiana*  
*Rynchospora aurea*—  
   *Ustilago leucoderma*  
*Saccharum arundinaceum*—  
   *Cintractia pulverulenta*  
   *Puccinia kuehnii*  
*Saccharum ciliare*—  
   *Ustilago sacchari-ciliaris*  
*Saccharum fuscum*—  
   *Puccinia kuehnii*  
   *Ustilago consimilis*  
*Saccharum narenga*—  
   *Puccinia kuehnii*  
*Saccharum officinarum*—  
   *Alternaria tenuis*  
   *Apiospora camptospora*  
   *Botryodiplodia saccharina*  
   *B. theobromae*  
   *Cephalosporium sacchari*  
   *Ceratostomella paradoxa*

HOST INDEX—*contd.**Saccharum officinarum*—*contd.*

- C. adiposum*
- Cercospora longipes*
- C. vaginæ*
- Colletotrichum falcatum*
- Cytospora sacchari*
- Helminthosporium sacchari*
- Hendersonina sacchari*
- Leptosphaeria sacchari*
- Marasmius sacchari*
- Neocosmospora vasinfesta*
- Phoma saccharina*
- Pleocyta sacchari*
- Stauroinema sacchari*
- Ustilago scitaminea*

*Saccharum sara*—

- Puccinia kuehnii*

*Saccharum spontaneum*—

- Phyllachora sacchari*
- P. sacchari-spontanei*
- Puccinia kuehnii*
- Ustilago ? consimilis*

*Salix alba*—

- Cytospora salicis*
- Melampsora salicis-albae*

*Salix daphnoides*—

- Melampsora ? larici-caprearum*

*Salix elegans*—

- Melampsora ? larici-caprearum*

*Salix tetrasperma*—

- Melampsora ? larici-caprearum*

*Salix sp.*—

- Coniothyrium indicum*
- Phoma salicina*
- Ucinula salicis*

*Sanicula europaea*—

- Puccinia saniculae*

*Sansevieria sp.*—

- Diplodia sansevieriae*

*Santalum album*—

- Asterina congesta*
- Phytophthora arecae*

*Saussurea sp.*—

- Oidiopsis taurica*
- Puccinia ? saussureae*
- Septoria sordidula*

*Saxifraga ligulata* var. *ciliata*—

- Puccinia saxifragae-ciliatae*

*Saxifraga micrantha*—

- Puccinia saxifragae-micranthae*

*Schinus molle*—

- Phyllachora permixta*

*Schleichera triflora*—

- Rosellinia bunodes*

*Scirpus affinis*—

- Uromyces indicus*

*Scirpus articulatus*—

- Puccinia scirpi*

*Scirpus barbatus*—

- Puccinia scirpi*

*Scirpus supinus*—

- Physoderma schroeteri*

*Scirpus sp.*—

- Physoderma schroeteri*
- Uromyces ? scirpi*

*Scleria elata*—

- Farysia butleri*

*Scleria sp.*—

- Puccinia xanthopoda*

*Scoparia dulcis*—

- Sclerotinia sclerotiorum*

*Scrophularia sp.*—

- Septoria scrophulariae*

*Scutellaria angulosa*—

- Acidium scutellariae*

*Scutellaria repens*—

- Acidium scutellariae*

*Selina westermanni* (insect)—

- Ceralomyces selinae*

*Senecio rufinervis*—

- Acidium flavescens*

*Serratula pallida*—

- Cystopus tragopogonis*
- Puccinia schirajewskii*

*Sesamum indicum*—

- Corticium solani*
- Fusarium vasinfestum*
- Macrophomina phaseoli*
- Phytophthora parasitica*

*Sesbania aegyptiaca*—

- Cercospora sesbaniae*
- Uredo sesbaniae*

*Sesbania grandiflora*—

- Cercospora sesbaniae*
- Sclerotium rolfsii*

*Sesbania sp.*—

- Phyllosticta sesbaniae*

*Setaria glauca*—

- Uromyces setariae-italicae*
- Ustilago panici-glaucae*

*Setaria intermedia*—

- Uromyces setariae-italicae*

*Setaria italica*—

- Acrothecium lunatum*
- Piricularia ? oryzae*
- Sclerospora graminicola*
- Uromyces setariae-italicae*
- Ustilago crameri*

*Setaria verticillata*—

- Uromyces setariae-italicae*

*Shorea robusta*—

- Fomes elegans*
- Lentinus melanophyllus*
- Polyporus gilvus* (wood)
- P. shoreae*

## HOST INDEX—contd.

- Shorea robusta*—contd.  
 Polystictus tomentosus (wood)  
 Sebacia alutacea (stems)
- Shorea talura*—  
 Asterina pleniporus  
 Morenoella shoreae
- Sida cordifolia*—  
 Puccinia heterospora
- Sida humilis*—  
 Puccinia heterospora
- Sida mysorensis*—  
 Puccinia heterospora
- Sida spinosa*—  
 Puccinia heterospora
- Siegesbeckia orientalis*—  
 Sphacrotheca humuli var. fuliginosa
- Sisymbrium irio*—  
 Peronospora parasitica
- Smilax aspera*—  
 Puccinia prainiana
- Smilax elegans*—  
 Puccinia prainiana
- Smilax macrophylla*—  
 Puccinia prainiana
- Solanum melongena*—  
 Cercospora solanacea  
 Macrophomina phaseoli  
 Phoma solani  
 Phyllosticta hortorum
- Solanum nigrum*—  
 Cercospora solanacea  
 Colletotrichum capsici
- Solanum tuberosum*—  
 Actinomyces scabies  
 Alternaria solani  
 Cercospora conoideae  
 Colletotrichum atramentarium  
 Corticium solani  
 Fusarium caeruleum  
 F. oxysporum  
 F. radicicola  
 F. trichothecoides  
 Macrophomina phaseoli  
 Phytophthora infestans  
 Pythium arotrogus  
 Sclerotium rolfii  
 Spongospora subterranea
- Solanum xanthocarpum*—  
 Colletotrichum capsici
- Solanum* sp.—  
 Aecidium solani  
 Puccinia solanacearum
- Solidago virgaurea*—  
 Uromyces solidaginis
- Sonchus oleraceus*—  
 Bremia lactucae
- Sorghum vulgare*: see *Andropogon sorghum*
- Spermaceae hispida*—  
 Cercospora diodinae
- Spermaceae stricta*—  
 Puccinia lateritia
- Sphenodesmum eryciboides*—  
 Capnodium salicinum
- Spirogyra* sp.—  
 Olpidiopsis schenkiana
- Spodiopogon albidus*—  
 Puccinia pachypes
- Spodiopogon*: see also *Ischaemum*
- Spondias mangifera*—  
 Cerotelium alienum
- Sporobolus diander*—  
 Uredo ignobilis
- Stellaria paniculata*—  
 Puccinia arenariae
- Stipa sibirica*—  
 Erysiphe graminis  
 Uromyces mussooriensis
- Stipa* sp.—  
 Diplodina butleri  
 Epichloe typhina  
 Puccinia coronata  
 P. oligocarpa  
 Septoria stipina
- Stranvaesia glaucescens*—  
 Aecidium stranvaesia
- Strobilanthes barbatus*—  
 Puccinia aggregata
- Strobilanthes dalhousianus*—  
 Puccinia pollinae  
 Uromyces strobilanthis
- Strychnos nux-vomica*—  
 Cercospora strychni  
 Meliola stenospora
- Suaeda fruticosa*—  
 Uromyces chenopodii
- Swertia alata*—  
 see *Peridermium himalayense*
- Swertia angustifolia*—  
 see *Peridermium himalayense*
- Swertia cordata*—  
 see *Peridermium himalayense*
- Symplocos spicata*—  
 Sphaerella bhauria  
 Vizolla conferta
- Symplocos thenefolia*—  
 Exobasidium indicum
- Symplocos* sp.—  
 Asterina indica  
 Penicillium tenellum  
 Phacidium symplocinum  
 Phyllosticta symploci
- Tabernaemontana coronaria*—  
 Choanephora infundibulifera

HOST INDEX—*contd.*

*Tabernaemontana heyneana*—  
Puccinia engleriana

*Tamarindus indica*—

Hendersonia tamarindi  
Hypoxyton indica (wood)  
H. vividum (bark)  
Meliola tamarindi  
Pholiota gollani (trunk)  
Polystictus sarbadhikarii (wood)  
Xylaria euglossa (wood)

*Tamarix gallica*—

Botryosphaeria tamaricis

*Taraxacum officinale*—

Puccinia taraxaci  
Sphaerotheca humuli var. fuliginea

*Taraxacum waltii*—

Puccinia taraxaci

*Taxus baccata*—

Diaporthe taxicola  
Sirothyrium taxi

*Tectona grandis*—

Hirneola polytricha (wood)  
Phyllosticta tectonae  
Uncinula tectonae  
Uredo tectonae

*Tephrosia candida*—

Uredo tephrosiicola

*Tephrosia purpurea*—

Ravenella mitis  
Uredo tephrosiae

*Terminalia arjuna*—

Polystictus affinis (wood)  
Xylaria ? trichopoda (seeds)

*Terminalia bellerica*—

Cercospora terminaliae

*Terminalia catappa*—

Cercospora catappae  
Diplodia catappae  
Gloeosporium terminaliae  
Meliola amphitricha  
Phyllosticta catappae  
Polyrhizon terminaliae

*Terminalia tomentosa*—

Polystictus gollani (wood)

*Terminalia* sp.—

Pyrenocarpon magnificum

*Thalictrum javanicum*—

see *Accidium urceolatum*  
Puccinia persistens

*Thalictrum minus*—

see *Accidium urceolatum*  
Erysiphe polygoni  
? Puccinia pruni-spinosae

*Thalictrum* sp.—

Accidium urceolatum

*Thea sinensis*—

Acanthostoma wattii (on Asterina)  
Asterina camelliae  
Botryodiplodia thecobromae  
Cercospora theae  
Corticium dealbans  
C. invisum  
C. repens  
C. salmonicolor  
Dinemasprium hispidulum (wood)  
Exobasidium vexans  
Fomes lamaecensis (roots)  
F. lignosus  
Ganoderma applanatum  
G. lucidum  
Glomocrella cingulata  
Hendersonia theicola  
Hirneola auricula-judae (stem)  
Kretzschmaria micropus (roots)  
Laestadia camelliae  
Marasmius equicrinus  
M. pulcher  
Nectria cinnabarina  
Pestalozzia theae  
Phaeosaccardinula theae  
Poria hypobrunnea  
Sphaerostilbe repens  
Stilbum nanum  
Thyridaria tarda  
Ustulina zonata

*Thea* sp.—

Rosellinia arcuata

*Themeda*: see *Anthistiria*

*Theobroma cacao*—

Phytophthora palmivora

*Thysanolaena agrostis*—

Coniosporium arundinis  
Rosellinia sublimbata

*Tinospora cordifolia*—

Cercospora menispermii  
Phyllachora dolichospora

*Trichosanthes anquina*—

Cercospora trichosanthis  
Pythium aphanidermatum

*Trichosanthes cucumerina*—

Corticium solani  
Pseudoperonospora cubensis

*Trichosanthes dioica*—

Erysiphe cichoracearum  
Pseudoperonospora cubensis  
Pythium aphanidermatum

*Trifolium alexandrinum*—

Corticium solani

*Trifolium pratense*—

Pseudopeziza trifolii  
Uromyces trifolii

*Trifolium resupinatum*—

Dothidella trifolii  
Uromyces trifolii

HOST INDEX—*contd.*

- Trigonella foenum-graecum*—  
   Erysiphe polygoni  
   Uromyces anthyllidis  
*Trigonella polycerata*—  
   Peronospora viciae  
*Triticum vulgare*—  
   Erysiphe graminis  
   Helminthosporium sativum  
   Piricularia ? oryzae  
   Pythium graminicolum  
   Sclerotinia sclerotiorum  
   Sclerotium rolfsii  
   Septoria tritici  
   Tilletia caries  
   T. foetens  
   Urocystis tritici  
   Ustilago tritici  
*Triticum* sp.—  
   Puccinia glumarum  
   P. graminis  
   P. triticea  
*Turraza* sp.—  
   Diplochorella indica  
*Urtica parviflora*—  
   Puccinia canicis  
   P. urticae  
*Valeriana leschenaultii*  
   Uredo valerianae-wallichii  
*Valeriana wallichii*  
   Uredo valerianae-wallichii  
*Vallaria heynei*  
   Aecidium ponderosum  
   Cercospora punjabensis  
*Vangueria spinosa*—  
   Hemileia ? woodii  
*Vangueria* sp.—  
   Aecidium vangueriae  
   Butleria inaghathani  
*Verbena officinalis*—  
   Septoria verbenae  
*Viburnum* sp.—  
   Septoria butleri  
   S. viburni  
*Vicatia conifolia*—  
   Uredo vicatiae  
*Vicia faba*—  
   Erysiphe polygoni  
   Uromyces fabae  
*Vicia hirsuta*—  
   Peronospora viciae  
   Sclerotinia sclerotiorum  
   Urophlyctis alfalfae  
*Vicia auriculata*—  
   Cercospora viciae  
*Vicia vestita*—  
   Septoria viciae  
*Vigna catjang*—  
   Corticium solani  
   Macrophoma phaseolina  
   Macrophoma phaseoli  
   Neocosmospora vasinfecta  
   Ophiobolus porphyrogonus (stem)  
   Uromyces appendiculatus  
*Vigna vexillata*—  
   Uromyces appendiculatus  
   U. vignae  
*Vinca pusilla*—  
   Oidiopsis tanrica  
*Vinca rosea*—  
   Phytophthora parasitica  
*Viola odorata*—  
   Phyllosticta tricoloris  
   Thielavia basicola  
*Viola patrinii*—  
   Septoria hyalina  
*Viola serpens*—  
   Puccinia violae  
*Viola suaveolens*—  
   Puccinia violae  
*Viola* sp.—  
   Septoria violae  
*Vitex leucoxydon*—  
   Meliola sakawensis  
*Vitex negundo*—  
   Ramularia viticis  
*Vitis adnata*—  
   Cerotium vitis  
*Vitis himalayana*—  
   Phakopsora cronartiiiformis  
*Vitis latifolia*—  
   Cerotium vitis  
*Vitis quadrangularis*—  
   Mykoserinx arabica  
*Vitis vinifera*—  
   Cercospora viticola  
   Eutypella vitis (wood)  
   Gloeosporium ampelophagum  
   Plasmopara viticola  
   Rosellinia necatrix  
   Uncinula necator  
*Vossia speciosa*—  
   Uromyces vossiae  
*Webera corymbosa*—  
   Lembosia incisa  
   Meliola asterinoides var. major  
   Puccinia spongiosa  
*Wedelia urticaefolia*—  
   Uredo wedeliae-biflorae  
*Wilstroemia canescens*—  
   Melampsora yoshinagai  
*Withania coagulans*—  
   Aecidium withaniae

HOST INDEX—*concl'd.*

*Woodfordia floribunda*—  
*Cercospora woodfordiae*

*Xylia dolabriformis*—  
*Fomes spadiceus* (wood)

*Tucca aloifolia*—  
*Microdiplodia agaves*

*Zanthoxylon ovalifolium*—  
*Meliola amphitricha*

*Zanthoxylum* sp.—  
*Aecidium spissum*

*Zea mays*—  
*Acrothecium lunatum*  
*Helminthosporium turcicum*  
*Oospora maydis*  
*Physoderma zeae-maydis*  
*Puccinia maydis*  
*Sclerospora indica*  
*Sorosporium roilianum*  
*Ustilago zeae*

*Zingiber cassumunar*—  
*Taphrina maculans*

*Zingiber officinale*—  
*Colletotrichum zingiberis*  
*Neocosmospora vasinfecta*  
*Pythium aphanidermatum*

*Zingiber zerumbet*—  
*Taphrina maculans*

*Zinnia elegans*—  
*Choanephora simsoni*

*Zizyphus jujuba*—  
*Eutypella zizyphi*  
*Hypoxyton ? hypomiltum*  
*Phakopsora zizyphi-vulgaris*

*Zizyphus oenoplia*—  
*Crossospora zizyphi*

*Zizyphus rotundifolia*—  
*Phakopsora zizyphi-vulgaris*

*Zizyphus rugosa*—  
*Crossospora zizyphi*



# INDIA

AND  
ADJACENT COUNTRIES.

- REFERENCE.
- |                              |               |
|------------------------------|---------------|
| British India                | Red           |
| Princely States              | Yellow        |
| Foreign possessions in India | Various Green |
| Railways with Station        | Black         |
| Paragat States               | P.S.          |
| Madras                       | M.S.          |
| Central India                | C.I.          |
| Assam                        | A.            |
| Bombay                       | Ba.           |